CHAPTER 1

Introduction

In pre-modern times, technological inventions and scientific discoveries depended on the experiences of craftsmen and farmers as well as on the observations of geniuses. As a populous country, China did not lack skillful craftsmen, experienced farmers, and geniuses. Hence, it had comparative advantages in developing science and technology. China was the most prosperous nation in the world; it led other nations in scientific discovery, technological innovation, productivity, industrialization, and wealth creation until about two or three hundred years ago. In the past, compared with China, "the West ... was essentially agrarian and ... was poorer and underdeveloped."[1]

As world history moved into the modern era, scientific discoveries and technological inventions began relying on scientific experiments. China's large population no longer constituted a comparative advantage in making scientific and technological progress. Meanwhile, the rigid imperial examination system — the civil service examination aiming to train obedient officials — became an obstacle to the development of human capital needed to ignite a scientific revolution. As a consequence, China, an ancient and once-glorious civilization, fell into obscurity during the scientific revolution that swept the Western world.[2] The result was that the

1. Carlo M. Cipolla, *Before the Industrial Revolution: European Society and Economy, 1000–1700*, 2nd ed. New York: Norton, 1980, p. 171.
2. Justin Yifu Lin, "The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China", *Economic Development and Cultural Change*, Vol. 43, No. 2 (January 1995), pp. 269–92.

Western nations reaped the fruit of the scientific and industrial revolution that enabled them to pull ahead economically and eventually to achieve economic modernization, while China saw its national power lag far behind that of the West.

In the modern times, it was not necessary for developing countries to invent independently the science and technology essential for their economic development. Rather, developing countries could develop their economies by learning from other developed countries and by borrowing technology. Beginning in the 1950s, China accelerated its industrialization and tried to achieve economic modernization by launching a series of political movements. However, the results were far from satisfactory. Before the recent reform (which went into effect in the late 1970s) began, the gap between China and more advanced countries widened rather than narrowed. For example, in 1950, China's gross domestic product (GDP) was more than twice that of Japan, but it was only 90% of Japan's in 1980.[3]

In the late 1970s, China initiated a full-scale economic reform in rural and urban parts of the country. The outcomes were impressive. Since 1978, China has been one of the world's fastest-growing economies, with an annual GDP growth rate averaging 9.6%, a record level for the country since the founding of the People's Republic of China in 1949. Meanwhile, China's per-capita GDP growth rate averaged 8.4% annually, a rate comparable to the growth rates of the four Little Dragons during the period of their most rapid development. In particular, during this period China's five coastal provinces, which altogether have four times the area and five times the population of the four Little Dragons combined, have maintained a GDP growth rate of 12%, surpassing the growth rates of the four Little Dragons at their height. Such growth is unprecedented. If the conditions favorable to China's economic growth can be maintained or improved upon, we predict that in the near future China's

3. Angus Maddison, *Monitoring the World Economy, 1820–1992*. Paris: OECD, 1995, pp. 183, 191.

economic scale will become larger than that of the United States and Japan and that the country will thus be the biggest economy in the world.

China, whose population makes up two-thirds of the population of all developing nations, is undergoing a series of economic reforms. It has been scoring remarkable success in its transition from a centrally planned economy to a market economy. It is likely to rise as a major world power after more than two centuries of decline. The possibility that China may become the only country in world history to have fallen from the zenith of human civilization into the trough and to have again climbed to the apex will undoubtedly draw the attention of academics, among others. The aims of this book are to analyze the causes of the "China miracle", to use this analysis to determine the most productive direction for further reform in China, and to discuss the general implications of China's experience for other developing nations undergoing similar economic transition.

1.1 Economic Development Since Reform, and Prospects for the 21st Century

In the late 1970s, China began to reform its highly centralized and inefficient economic system. The first step in this process was to introduce the household responsibility system (HRS) in rural areas. In urban areas, reform focused on decentralizing powers to state-owned enterprises (SOEs) and on allowing them to share profits. Moreover, non-collectively-owned enterprises were permitted. Along with the reform of the highly centralized planned allocation mechanism, prices for products and production factors were gradually readjusted or partially liberalized. The government also adopted an open-door policy to attract foreign capital, allow foreign direct investment (FDI), establish joint ventures or exclusively foreign-owned enterprises and expand foreign trade. The reforms that have been carried out over the past two decades have increased China's economic efficiency and adjusted its economic structure. The Chinese economy has been transformed from a typical centralized planned economy into one where the market plays a major role in

Table 1.1 Average Annual Growth Rates (1980–90 and 1990–99) in China and Other Types of Economies (%)

Economy	GDP		Agriculture value added		Industry value added		Services value added	
	1980–90	1990–99	1980–90	1990–99	1980–90	1990–99	1980–90	1990–99
China	10.1	10.7	5.9	4.3	11.1	14.4	13.2	9.2
Low-income	4.4	2.5	3.0	2.5	5.4	1.1	5.7	4.7
High-income	3.1	2.4	—	0.8	—	2.6	—	2.2
World average	3.2	2.5	2.7	1.6	—	3.0	—	2.5

Source: The World Bank, *World Development Report, 2000/2001*. Oxford: Oxford University Press, 2001, pp. 294–95.

resource allocation. The reform has made China one of the fastest-growing and most robust economies in the world.

According to the *World Development Report 2000/2001* released by the World Bank in 2000, China's annual GDP growth rates in 1980–90 and 1990–99 averaged 10.1% and 10.7%, respectively. These rates were the highest in the world during these two periods. They were 6.9 and 8.2 percent points higher than the world averages, 7.0 and 8.3 percent points higher than the rates of developed countries, 5.7 and 8.3 percent points higher than the rates of low income countries. Table 1.1 shows that several significant economic indicators in China were twice or even three times as high as those of other countries and the world average.[4]

The contrast is even sharper between the economic growth of China and that of the former Soviet Union and Eastern European countries, whose economies were on the verge of collapse after economic reform. Table 1.2 and Table 1.3 show that from 1988 to 1998 the former Soviet Union and most Eastern European countries reported negative economic growth and high inflation rates. In fact,

4. The World Bank, *World Development Report, 2000/2001*. Oxford: Oxford University Press, 2001, pp. 294–95.

Table 1.2 Real GDP Growth in Eastern Europe, the Baltic States, and the Commonwealth of Independent States (%)

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Estimated 1997 GDP*	Forecast 1998 GDP**
Total				−11.0	−9.5	−4.7	−5.4	−0.1	−0.2	2.0	−1.0	73	72
Eastern European Countries and the Baltic States				−11.0	−3.8	0.4	3.9	5.5	4.0	3.6	3.1	96	99
Albania				−30.0	−7.2	9.6	9.4	8.9	9.1	−7.0	10.0	80	88
Bulgaria	2.5	−1.9	−9.1	−12.0	−7.3	−1.5	1.8	2.1	−10.9	−6.9	4.0	63	66
Croatia				−29.0	−11.7	−8.0	5.9	6.8	6.0	6.5	4.8	76	80
Czechoslovakia	2.5	1.4	−0.4	−14.0	−3.3	0.6	3.2	6.4	3.9	1.0	−0.5	98	98
Estonia				−13.0	−14.2	−9.0	−2.0	4.3	4.0	11.4	5.0	73	77
Macedonia				−11.0	−21.1	−9.1	−1.8	−1.2	0.8	1.5	5.0	56	59
Hungary	−0.1	−0.2	−4.0	−12.0	−3.1	−0.6	2.9	1.5	1.3	4.4	4.6	90	95
Latvia				−8.0	−34.9	−14.9	0.6	−0.8	3.3	6.5	4.0	56	58
Lithuania				−13.0	−21.3	−16.2	−9.8	3.3	4.7	5.7	3.0	61	63
Poland	4.0	0.2	−11.6	−7.0	2.6	3.8	5.2	7.0	6.1	6.9	5.2	112	118
Romania	1.4	−6.9	−7.4	−14.0	−8.7	1.5	3.9	7.1	4.1	−6.6	−5.2	82	78
Slovakia	2.5	1.4	−0.4	−16.0	−6.5	−3.7	4.9	6.9	6.6	6.5	5.0	95	100
Slovenia				−9.0	−5.5	2.8	5.3	4.1	3.1	3.8	4.0	99	103

Table 1.2 (Cont'd)

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Estimated 1997 GDP*	Forecast 1998 GDP**
Commonwealth of Independent States				–11.0	–14.2	–8.9	–13.1	–4.6	–3.4	0.9	-3.6	57	55
Armenia				–12.0	–52.6	–14.8	5.4	6.9	5.8	3.1	6.0	38	40
Azerbaijan				–2.0	–22.6	–23.1	–19.7	–11.8	1.3	5.8	6.7	40	42
Belarus				–3.0	–9.6	–7.6	–12.6	–10.4	2.8	10.4	5.0	71	75
Georgia				–25.0	–44.8	–25.4	–11.4	2.4	10.5	11.0	9.0	32	35
Kazakhstan				–8.0	–2.9	–9.2	–12.6	–8.2	0.5	2.0	1.0	63	63
Kyrgyzstan				–5.0	–19.0	–16.0	–20.0	–5.4	7.1	6.5	4.0	57	60
Moldova				–12.0	–29.1	–1.2	–31.2	–3.0	–8.0	1.3	–2.0	35	34
Russia	4.5	1.9	–3.6	–11.0	–14.5	–8.7	–12.7	–4.1	–3.5	0.8	–5.0	58	55
Tajikistan				–9.0	–29.0	–11.0	–18.9	–12.5	–4.4	1.7	3.4	40	41
Turkmenistan				–7.0	–5.3	–10.0	–18.8	–8.2	–8.0	–26.0	5.0	42	44
Ukraine	2.3	4.1	–3.4	–14.0	–13.7	–14.2	–23.0	–12.2	–10.0	–3.2	0.0	37	37
Uzbekistan				–1.0	–11.1	–2.3	–4.2	–0.9	1.6	2.4	2.0	87	88

* The estimate takes the GDP level in 1989 as 100, and the GDP level in 1997 are in real terms.

** The forecast takes the GDP level in 1989 as 100, and the GDP level in 1998 are in real terms.

Source: *Economics of Transition*, Vol. 1, No. 3 (1993), pp. 370–78; *Economics of Transition*, Vol. 6, No. 2 (1998), p. 545.

Table 1.3 Inflation in Eastern Europe, the Baltic States, and the Commonwealth of Independent States (%)

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Eastern European Countries and the Baltic States										
Albania				36.0	236.6	30.9	15.8	6.0	17.4	42.1
Bulgaria	2.2	10.0	64.0	334.0	79.4	63.8	121.9	32.1	310.8	578.5
Croatia				123.0	938.2	1149.0	–3.0	3.5	3.4	3.8
Czechoslovakia	0.2	2.3	10.8	57.0	12.7	18.2	9.7	7.9	8.6	10.0
Estonia				212.0	953.5	35.6	42.0	29.0	15.0	12.0
Macedonia				115.0	1925.2	229.6	55.4	9.0	–0.6	2.6
Hungary	16.1	17.0	28.9	91.0	21.6	21.1	21.2	28.3	19.8	18.4
Latvia				172.0	959.0	35.0	26.0	23.1	13.1	7.0
Lithuania				225.0	1161.1	188.8	45.0	35.5	13.1	8.5
Poland	60.2	251.1	585.7	70.0	44.3	37.6	29.4	21.6	18.5	13.2
Romania	2.6	0.9	7.4	161.0	199.2	295.5	61.7	27.8	56.9	151.4
Slovakia	0.2	2.3	10.8	61.0	9.1	25.1	11.7	7.2	5.4	6.4
Slovenia				115.0	92.9	22.8	19.5	9.0	9.0	8.8
Median					199.2	35.6	26.0	21.6	13.1	10.0
Average				86.0	510.2	165.6	35.1	18.5	37.7	66.4
Commonwealth of Independent States										
Armenia				100.0		na	10896.0	1885.0	31.9	5.8	21.8
Azerbaijan				138.0	1395.0	1293.8	1788.0	84.5	6.5	0.4
Belarus				80.0	1159.0	1996.0	1960.0	244.0	39.0	63.0
Georgia				81.0	1176.9	7487.9	6474.4	57.4	14.3	7.1
Kazakhstan				91.0	2984.1	2169.0	1160.0	60.4	28.6	11.3
Kyrgyzstan				85.0	1259.0	1363.0	95.7	31.9	35.0	14.7
Moldova				98.0	2198.0	837.0	116.0	213.8	15.1	11.2
Russia		2.0	5.6	93.0	2506.1	840.0	204.4	128.6	21.8	10.9
Tajikistan				103.0	1364.0	7344.0	1.1	2133.0	40.5	163.6
Turkmenistan				90.0	644.0	9750.0	1328.0	1262.0	446.0	21.5
Ukraine	0.3	2.2	4.2	91.0	2730.0	10155.0	401.0	182.0	39.7	10.1
Uzbekistan				82.0	910.0	885.0	1281.0	117.0	64.0	50.0
Median					1364.0	2082.5	1220.5	100.8	31.8	13.0
Average				101.0	1666.0	4584.7	1391.2	363.0	63.0	32.1

Note: Figures for 1997 are estimated figures.

Source: *Economics of Transition*, Vol. 1, No. 3 (1993), pp. 370–78; *Economics of Transition*, Vol. 6, No. 2 (1998), pp. 545.

in most of these countries, the real GDP in 1998 was even lower than it had been in 1989.

Following the implementation of reform, China's economic growth underwent a momentous change. During the period 1978–2000, GDP increased from RMB 362.4 billion to RMB 8,940.4 billion, and per capita GDP increased from RMB 379 to RMB 7,063. Using comparable prices, the average annual growth rates were 9.5% and 8.1%, respectively; these were, respectively, 66% and 125% higher than the average annual growth rate of national income (5.7%) and than the average annual growth rate of per capita national income (3.6%) from 1952 to 1977.[5] Meanwhile, the average annual growth rates for primary industry, secondary industry, and tertiary industry were 4.7%, 11.4%, and 10.3%, respectively, while the rates for agriculture, industry, and service sectors[6] in 1952–77 were only 1.8%, 10.8%, and 4.5%, respectively. This represents an increase of 163%, 6%, and 128%.[7] During the period 1978–2000, growth in international trade was even more rapid. The total value of imports and exports increased from US$20.64 billion to US$474.3 billion and enjoyed an average annual growth rate of 15.3%. Exports increased from US$9.75 billion to US$249.2 billion, with an average annual growth rate of 15.9%, while imports increased from US$10.89 billion to US$225.1 billion, with an average annual growth rate of 14.8%.[8] Both surpassed the average annual GNP growth rate,

5. The GNP indicators for national economic statistics were first adopted in 1978, and therefore they could not be used to compare economic growth before and after the reform. Of the three substitute indicators — aggregate social value, gross industrial and agricultural value, and national income — the first involves duplicate calculations; the second neglects construction, transportation, and commerce and also involves duplicate calculation; the third approximates GNP and is the one we have chosen to use here.
6. The three industrial statistics were first calculated in 1978. Because we cannot compare economic growth of the primary, secondary and tertiary industry before and after reform, we use agriculture, industry, and services industry instead.
7. National Bureau of Statistics of China, *China Statistical Yearbook, 2001*. Beijing: China Statistics Press, 2001, p. 52.
8. National Bureau of Statistics of China, *China Statistical Yearbook, 2001*. Beijing: China Statistics Press, 2001, pp. 26–27.

indicating the increasing integration of the Chinese economy with the world economy.

With rapid economic growth, the income of rural and urban households increased significantly. The net income of rural households increased from RMB 133.6 in 1978 to RMB 2,253 in 2000, while the average annual disposable income of urban households increased from RMB 343.5 to RMB 6,280. Eliminating the effect of inflation, the real average annual growth rates were 7.4% and 6.3%, respectively, while the average annual growth rates were only 2.9% and 1.4% in the 21 years before the reform began. The proportion of income derived from financial assets in total income also increased steadily. In 2000, savings of rural and urban households reached RMB 6,433.2 billion, 303.5 times the 1978 level of RMB 21.2 billion, with an annual growth rate of 29.7%. In addition, urban and rural households had more than US$70 billion in foreign reserves, RMB 1,600 billion in various bonds, RMB 1,609 billion in stocks, more than RMB 100 billion in stock options, and RMB 1,465 billion in cash. Total financial assets exceeded RMB 11,800 billion.[9]

These changes raised the living standards of the Chinese people and improved their quality of life considerably. The per capita consumption level rose from RMB 184 in 1978 to RMB 3,397 in 2000. Using comparable prices, the average annual growth rate of consumption index was 7.2% in 1978–2000, 3.3 times the rate in 1952–77 (2.2%).[10] Moreover, changes occurred in the consumption structure. The Engel's coefficient (the ratio of consumption expenditure on food to total expenditure for daily life) for urban and rural residents decreased respectively from 57.5% and 67.7% in 1978 to 39.2% and 49.1% in 2000, a decrease of 18.3 and 18.6 percent points respectively.

Compared with historical figures, these changes in percentages

9. National Bureau of Statistics of China, *China Statistical Yearbook, 2001*. Beijing: China Statistics Press, 2001, various pages.
10. National Bureau of Statistics of China, *China Statistical Yearbook, 2001*. Beijing: China Statistics Press, 2001, p. 66.

are particularly dramatic. From 1952 to 1978, China's per capita annual consumption of major foodstuffs such as grain and edible oils actually decreased. The per capita consumption of poultry held steady. The per capita consumption of meats, eggs, and aquatic products increased by less than 100%, with an absolute increase of less than or slightly more than 1 kilogram. Only consumption levels for sugar and liquors, for which initial figures were very low, increased — sugar by 276% and liquors by 125%, an absolute increase of 2.5 kilograms and 1.4 kilograms, respectively. However, between 1978 and 2000, with the exception of a slow increase in the per capita consumption of grain, which resulted from its low income elasticity, the per capita consumption of other major foodstuffs increased significantly, some doubling and some even quadrupling. According to researches conducted by the Ministry of Health, the present average nutrition level in China has reached that of middle-income countries.

As for consumer durables, not only did the amount owned by households increase dramatically during the period 1978–2000, but the consumption structure also changed considerably. Household surveys conducted by the Statistical Department show that in the 1970s consumer durables were mainly watches, bicycles, sewing machines, and radios, each of which was valued at around RMB 100. In the 1980s, the major consumer durables were television sets, refrigerators, washing machines, and cameras, each worth about RMB 1,000. In the 1990s, the major durables included air conditioners, telephones, video cassette recorders, and video cameras, each valued at about RMB 5,000, as well as personal computers worth about RMB 10,000 apiece. In recent years, people have begun to buy items costing around RMB 100,000 each, including apartments and cars.

The economic development of the past 22 years, along with domestic and international conditions favourable for sustainable and rapid growth, has imbued China with the new hope of becoming one of the most prosperous economies in the world. In fact, the phenomenal changes in the Chinese economy have led many foreign observers to conclude that China, for centuries a "sleeping lion", is

awakening and is likely to become the largest economy in the world in the early decades of the 21st century.[11] Will the sleeping lion actually wake up? In response to this question, we offer a forecast and analysis.

In 2000, China's GDP reached RMB 8,818.9 billion. Calculating at the average foreign exchange rate of 2000, this is equivalent to US$1,076 billion, which ranked China the sixth largest economy in the world, after the United States (US$9,883 billion), Japan (US$4,677 billion), Germany (US$1,870 billion), United Kingdom (US$1,413 billion) and France (US$1,286 billion).[12]

Since initiating its reform, China has devalued its currency several times. The rate of the RMB to the dollar dropped from 1.7:1 in 1978 to 8.28:1 in 2000. This change has had a great impact on the growth rate of the GDP, which is calculated based on the official exchange rate. Moreover, since many products and services are classified as non-trade items, the large gap between developed and undeveloped countries' prices for these products tends to underestimate the economic scale of the developing nations based on the official foreign exchange rate. Some economists specializing in comparative international economies believe that China's actual economic scale far exceeds the estimate based on the official exchange rate, and they have attempted to come up with more accurate estimates of China's economic scale.

For example, economists at the International Monetary Fund (IMF) adopted the purchasing power parity (PPP) method to calculate China's GDP in 1992. Their estimate was US$1,700 billion, which is 4.7 times the figure based on the official exchange rate.[13] The World Bank also came up with an estimate using the PPP approach. Its estimate of China's GDP was US$2,740.44 billion in 1993, which is 4.8 times the figure based on the official foreign

11. "When China Wakes, A Survey of China", *The Economist*, 28 November 1992.
12. Data Source: http://www.worldbank.org/data/countrydata/countrydata.html
13. Hu Zuliu, "The Road to Prosperity — How China's Economic Position Is Evaluated in the World", *Economic Research Materials*, No. 21 (Nov. 1993).

exchange rate.[14] Ross Garnaut, an Australian economist, assumed that a similar consumption level implies a similar per capita GNP in economies with similar consumption habits. He compared China's consumption level with the levels of other Asian economies, particularly those of Taiwan, Hong Kong, and Singapore. He concluded that China's actual GDP was three times the official estimate.[15]

Because different samples, different data, and different estimation methods have been used, estimates of China's GDP may differ in spite of the fact that the same PPP method was used. However, all the estimates reach the same conclusion: that China's GDP, which is based on the official foreign exchange rate, undervalues real purchasing power. In Table 1.4, according to Heston Summers the GDP calculated using the PPP method is about eight times the value based on the official foreign exchange rate. Rand and the IMF

Table 1.4 Estimate of China's Per Capita GDP (unit = US dollar)

	Year	Based on official rate	PPP	PPP/ Estimate based on official rate
Heston Summers	1986	300	2,444	8.15
Rand	1990	370	1,031	2.49
Lawrence Summers	1990	370	2,140	5.78
BAST University	1991	370	1,680	4.54
IMF	1992	470	1,600	3.40
The World Bank	1993	485	2,120	4.37
Foreign Ministry of Australia	1994	530	1,500–2,500	2.83–4.72
The World Bank	1995	620	2,920	4.71

Source: Zheng Jingping, "How Many US Dollars Is China's Per Capita GNP?" *Economics Information*, 13 September 1996; The World Bank, *World Development Reports, 1990–97*. Beijing: China Finance and Economic Press, 1990–97; Harry Xiaoying Wu, *Measuring China's GDP* (EAAU Briefing Paper Number 8). Sydney: Department of Foreign Affairs and Trade of Australia, 1997.

14. The World Bank, *World Development Report, 1995*, pp. 162, 220.
15. Ross Garnaut and Ma Guonan, *Grain in China*. Canberra: East Asia Analytical Unit, Department of Foreign Affairs and Trade, 1993.

estimate that it should be about two to three times the value. Estimates reached by the World Bank and Ren Ruoen of Beijing Aeronautics and Space Technology University place the GDP at four times the value based on the foreign exchange rate, which lies somewhere in the middle of the four estimates mentioned above. We shall use the World Bank estimates for further analysis. As indicated in Table 1.5, in 1991, based on the official foreign exchange rate, the size of China's economy ranked tenth in the world. However, it ranked third when GDP was estimated using PPP calculations. In 1995, it ranked seventh based on the official foreign exchange rate and second based on the PPP method. Over the past five years, China's growth rate has been much higher than that of the other most affluent countries in the world, and the trend continues. Many scholars predict that if China can overcome internal and external constraints and can maintain this trend for the next 20 to 30 years, it will become the largest economy in the world.

Generally speaking, a country's economic growth rate is determined by three factors: (1) the increase of various production factors, especially capital; (2) the upgrading of industrial structure from low-value-added industry to high-value-added industry; and (3) the technological innovation. Among these factors, technological innovation is the most important. For production factors, natural resource endowment can be seen as given, while an increase in the labour force can make only a small difference. The only production factor that can differ greatly is the rate of capital accumulation. However, the rate of capital accumulation and the upgrading of industrial structure are constrained by the speed of technological innovation. If technology does not change, the continuous accumulation of capital will eventually lead to diminishing marginal returns, which in turn lower the incentive to accumulate more capital. Similarly, if there is no technological advancement in the economy, there will be no upgrading in the industrial structure.

To begin with, the fact that the Chinese economy can maintain a high growth rate can be attributed to its high capital accumulation rate. Such a high capital accumulation rate can provide strong support for rapid economic growth. Advancement in an economy's

Table 1.5 The Economic Scales of 10 Largest Economies in the World

1991							1995						
Based on exchange rate (1)			Based on PPP (2)			Difference (2)/(1)	Based on exchange rate (1)			Based on PPP (2)			Difference (2)/(1)
Rank	Nations	GNP	Rank	Nations	GNP		Rank	Nations	GNP	Rank	Nations	GNP	
1	United States	56100	1	United States	56100	1.00	1	United States	70984	1	United States	70984	1.00
2	Japan	33600	2	Japan	23700	0.71	2	Japan	49629	2	China	35046	4.71
3	Germany	15700	3	China	16600	3.86	3	Germany	22531	3	Japan	27682	0.56
4	France	12000	4	Germany	12500	0.80	4	France	14519	4	Germany	16437	0.73
5	Italy	11500	5	France	10400	0.87	5	United Kingdom	10940	5	India	13012	
6	United Kingdom	10100	6	India	10000		6	Italy	10879	6	France	12218	0.84
7	Canada	5800	7	Italy	9800	0.85	7	China	7441	7	Italy	11366	1.04
8	Spain	5300	8	United Kingdom	9000	0.89	8	Brazil	5795	8	United Kingdom	11267	1.03
9	Brazil	4500	9	Brazil	7900	1.76	9	Canada	5736	9	Brazil	8597	1.48
10	China	4300	10	Mexico	6000		10	Spain	5323	10	Indonesia	7345	

technological structure is closely linked to the upgrading of the economy's endowment structure from a relative scarcity in capital to a relative abundance in capital. This means that relatively large capital accumulation is required for persistent technological advancement, which in turn leads to rapid economic growth. China is one of the few economies that can maintain a high rate of capital accumulation. Since the reform began, annual capital accumulation has accounted for about 40% of China's GDP. This characteristic will have a significant positive impact on maintaining rapid economic growth in China.

The second factor is the upgrading of the industrial structure, especially the shift of labour forces to higher-value-added industries, which can provide strong support for economic growth. With the rise of average income, the labour force will shift from the primary sector to the secondary and tertiary sectors. Given that China has followed a heavy-industry-oriented development strategy for a long time, the allocation of the labour force is greatly distorted, with 70% of the total labour force still concentrated in the low-value-added agricultural sector. With further economic growth in China, the development of the labour market, and improvement in related institutions, the labour force will shift from low-value-added sectors to high-value-added production sectors. Owing to the low overall development level and to the great disparity in regional development, the shift of labour from agricultural sectors with low marginal productivity to non-agricultural sectors with higher marginal productivity will take at least several decades. Thus, this process will contribute significantly to maintaining rapid economic growth in China.

The third factor is China's so-called "advantage of backwardness" in technology. There are two ways to realize technological innovation: (1) through conducting independent research and development (R&D) by self-investment, and (2) through learning from, imitating, or purchasing advanced technologies from other countries. For the developed countries, the former is the most important way for them to achieve technological innovation because they have already adopted the best technologies in their production.

The chance that investments in the R&D of the new technology will achieve success is very low. Statistically, 95% of investments in R&D can not produce the desired technology. Even among innovations that do succeed, only a small fraction have commercial value. Thus, R&D in new technologies requires a huge investment but carries a high risk of failure. Therefore, technological innovation is costly, and progress is rather slow in the developed countries. In contrast, a developing country like China that lags far behind in technology can choose to use "the advantage of backwardness" to effect technological innovation. It can do this by imitating developed countries' technology and by purchasing technology from these countries. Many studies have shown that buying patents costs no more than one-third of the cost of independent research. In addition, the purchased patented technologies have already been proven to have commercial value.

The Japanese economy maintained rapid growth for about 40 years, from the 1950s to the late 1980s. The four Little Dragons have also enjoyed rapid economic growth since the early 1960s. Their economic growth rates are incredible. All these countries and regions introduced or imported advanced technologies from developed countries to achieve rapid technological progress, a swift economic transition, and a high degree of economic growth.

At the end of 1978, China began to implement its economic reform. Since then, it has embarked on the same path of rapid growth that was taken by Japan and the four Little Dragons, which relied on importing technology. In 1978, the technological gap between China and the advanced countries was much wider than that between the advanced countries and Japan in the early 1950s, and that between the advanced countries and the four Little Dragons in the early 1960s. If relying on that technological gap to obtain low-cost technological innovation could help Japan and the four Little Dragons maintain a high economic growth rate for 40 years, it seemed logical that it would help China do the same. In addition, even by the 1990s, the percentage of China's population working in the low-value-added agricultural sector was much higher than the corresponding percentages in Japan in the 1950s and in the four Little Dragons in the

1960s. Therefore, the potential for resource reallocation from low-value-added sectors to higher-value-added ones was greater in China. Meanwhile, China's capital accumulation rate is about 40% of the GDP, which is among the highest in the world. All these factors indicate that there is great potential for rapid development in China and that the Chinese economy should be able to maintain a high growth rate for at least 30 more years.

Two more factors contribute to China's potential for achieving rapid economic growth. First, the country's potential for improving institutional efficiency is still considerable. Although China has made great strides in economic development since adopting a gradual reform policy, the task of economic transition is yet to be completed. Through further reform, resource allocation efficiency can be pushed closer to the production possibility frontier (PPF). It will then be possible to further unleash the productive forces that were previously suppressed by the traditional economic system. Although institutional improvement has mainly a one-time effect, it can exert significant impact. In the early stage of reform, China improved its resource-allocation mechanism in the agricultural sector by giving up the collective farming and adopting the household responsibility system (HRS). This institutional change released farmers' incentives that had been suppressed under the People's Commune System, shifting agricultural production efficiency closer to the PPF and greatly stimulated agricultural growth. We believe that further reform of SOEs with an emphasis on the creation of markets for fair competition will greatly improve the production efficiency in China.

Second, China's size is an important factor in maintaining rapid economic growth. Generally speaking, in countries or regions with small economic scales, internal disparity is also relatively small, and it takes less time to bridge the gap between internal technological structures. However, the case is quite different for large countries. Because of the great disparity within such countries, more time is needed to narrow the internal gap between internal technological structures. China is a large country with a huge imbalance in the technological structures of its different regions. Efforts to narrow the technological gap began in the eastern coastal regions. These regions

have contributed significantly to the country's rapid economic growth of the last 20 years. However, there is still a wide gap between the coastal areas of China and developed counties. This gap offers a great deal in terms of development potential. In addition, there is an enormous disparity not only between the eastern part of China and developed countries but also between China's central and western regions and its eastern regions. Thus, the growth potential in the central and western regions is even more impressive than the growth potential of the eastern regions. Since the cost of transferring technology within a single economy is usually much lower than that of transferring it across countries, such a transfer will contribute even more to economic growth.

China's comparative advantage in scientific and technological innovation that resulted from its large population was lost as it lagged behind the Western world in scientific discoveries and technological innovation through the approach of science cum experiment. In the last 20 years, both formal and informal education has improved significantly in China, and the education gap between China and developed countries is narrowing. Therefore, considering China's large population, not only will the absolute number of skilled labourers in the country be large, but also the number of gifted scientists. The more scientists, the bigger the advantage that scientists as a group will have. The larger the economic size of the economy, the larger the impact exerted by the individual scientist, and the better the conditions for technological progress. China's size may thus become an important factor in its reassertion of economic leadership in the world after losing its position in the wake of industrial revolution.

Many scholars and research institutes have already conducted research on China's future GDP. For example, according to the Rand Institute of the United States, by 2010 China's GDP will surpass the GDPs of the United States and Japan. The Department of Foreign Affairs and Trade of Australia estimated that China's GDP will surpass that of the United States and that China will become the world's largest economy by 2015. August Madison, a renowned scholar in the field of long-term economic development, has made a

similar prediction. Economists at the World Bank have predicted that if China can maintain its present economic growth rate until 2020.[16] If the GDPs of United States and Japan are 109 units and 43 units respectively in 2020, that of China will be 140 units. Even if we make a conservative estimate based on the official exchange rate (that is, if China, the United States, and Japan maintain the annual average growth rates they enjoyed between 1980 and 1995), China's economic size will surpass that of the United States and Japan in around 2035. (The average growth rates of the three countries during this period were 9.6%, 4.0%, and 2.7% respectively.[17]) In short, if China can maintain a long-term rapid economic growth rate, it will become the largest economy in the world in the first half of the 21st century.[18]

1.2 Policy Barriers to Persistent Growth

China's economy has sustained a growth rate of 10% for nearly 22 years, which makes it rather eye-catching in the world. If China can maintain a total of 50 years of rapid growth, it will be able to reach

16. Harry Xiaoying Wu, *Measuring China's GDP* (EAAU Briefing Paper No. 8). Sydney: Department of Foreign Affairs and Trade of Australia, 1997, p. 25; Xu Tianqing, *World Pattern and the Economic Development Strategy of China — The Theoretical Meditation at the Turn of the Century*. Beijing: Economic and Science Press, 1998, pp. 26–27; Augus Maddison, *Chinese Economy: Performance in the Long Run*. Paris: OECD, 1998.
17. The World Bank, *World Development Report, 1995*. Beijing: China Finance and Economics Press, 1995, pp. 164, 167.
18. This forecast coincides with the prediction of former Vice President and Chief Economist of the World Bank, Professor Lawrence Summers. He once predicted that if China and the United States maintained their growth trends of the past fourteen years, then in 2015 China would surpass the United States and become the largest economy in the world. He also thinks that China is the only country possessing the potential to surpass the United States (Hu Zuliu, "The Road to Prosperity — How China's Economic Position Is Evaluated in the World", *Economic Research Materials*, No. 21 (Nov. 1993)). Paul Krugman also holds the view that China is the only country with the potential to surpass the United States (Paul Krugman, "The Myth of Asia's Miracle", *Foreign Affairs*, Vol. 73, No. 6 (November/December 1994), pp. 62–78.).

the target of becoming a middle-income country in the first half of the 21st century. Of course, we cannot know whether China will be able to maintain altogether half a century's unparalleled growth. Delays in structural transition or mistakes in development strategy could slow the growth process or even derail it altogether. In particular, even though the Chinese economy has grown enormously in the past 22 years since the beginning of reform, accompanying such rapid growth have been a series of problems that may impede China's sustained, rapid economic growth. These obstacles are outlined below.

1. Cyclical Fluctuations in the Economy

Although the average annual growth rate has reached quite a high level since the economic reform began in 1978, the figures have varied considerably from year to year. In some years the annual growth rate reached 13–14%, while in others they were only 3–4%. There have been four cycles over the past 22 years, each lasting an average of 4 to 5 years. If the cyclical fluctuations had been stable or convergent, their negative impact might have been easier to endure. Unfortunately, the degree of these fluctuations displayed an increasing trend, which not only interfered with the goal of achieving a stable and high growth rate but also gave rise to the fear that China's economy might crash during the fluctuations. If this state of affairs cannot be ameliorated, the hope to become the world's largest economy by the first half of the 21st century will be dashed.

2. An Increase in Serious Corruption

During the past 20 years, the market has played an increasingly important role in China's resource allocation. However, China's central government still controls the allocation and pricing of many resources (e.g., capital and licenses). The difference between planned prices and market prices is known as the institutional rent. Using unscrupulous means to gain from the institutional rent is called rent-seeking. Government officials are reluctant to give up its allocation

power, since that constitutes an important source of their own income. They take every opportunity to emphasize how indispensable they are and even claim that they are upholding a bastion of a socialist market economy. As the reform proceeds, the government increasingly encourages enterprises to secure resources through market, instead of from the allocation plan of the country. However, as long as there is institutional rent, enterprises will not cease rent-seeking. In recent years, the incentives for enterprises to engage in rent-seeking activities have become increasingly powerful, while the means of undertaking such activities have become increasingly unscrupulous. Thus, corruption has grown rampant. The situation has caused the corruption of government officials, who have the power to allocate cheap resources. This has not only discredited the reform but has also caused widespread discontent among the Chinese people.

3. Problems in the Banking System

It is estimated that the proportion of non-performing and bad loans in China's commercial banks is about 25% or more. This rate is even higher than the corresponding rates of Thailand, Malaysia, Indonesia, and South Korea, all of which were hit hard by the recent Asian financial crisis. The reason China was able to avoid the financial turmoil is primarily that its capital account is not open and because RMB is not convertible. However, if the proportion of non-performing and bad loans continues to rise, depositors will eventually lose confidence in the banking system. In addition, the risk of the banking system being attacked by foreign speculators will increase as the openness of the financial market increases after the WTO accession. These two factors combined may trigger a panic in the banking system and a financial crisis in China, which in turn will threaten the overall economic development.

4. Serious Losses of State-owned Enterprises

Before the reform, government revenue came mainly from the taxes

and profits of SOEs. Since the reform, SOEs have performed poorly. In 1997, in some industries all SOEs suffered losses and the government had to subsidize them. SOEs' losses and their subsidies were the major reason for the government's poor financial performance. If SOEs' performance does not improve, the government will eventually be unable to bear the losses they incur. If a large number of SOEs go bankrupt simultaneously, many workers will be laid off. This will further threaten social stability, not to mention rapid economic growth.

5. Widening of the Interregional Disparities

At the initial stages of reform, the gaps among China's eastern, central, and western regions and the gap between rural and urban areas were narrowing. However, after 1985, the gaps widened again. By the early 1990s, the disparities were even greater than they had been before the reform. This made the central and western regions demand different policies from the eastern regions. While the eastern regions hope that the central government will continue to effect decentralization and marketization, the central and western regions would prefer that the government emphasize centralization so as to give fiscal transfers. It is difficult for the central government to make and implement policies that satisfy everyone. In addition, because of the gaps, many peasants in the central and western regions grew dissatisfied with the livelihood they could look forward to in agricultural production, and they moved *en masse* to the eastern region in search of jobs.

The number of rural migrants in Chinese cities is now estimated at between 80 and 100 million. In periods of economic recovery and boom, cheap rural labour forces constituted a vital contribution to economic development in the east. In addition, many rural migrants saved their money and send it home, thereby providing the major source of capital accumulation and income increase in the central and western regions. However, in the event of economic recession, large numbers of rural migrants in the cities could become the root of social unrest.

6. Problems of Grain Production

"No food leads to instability" is a political truism that has been adopted by politicians over thousands of years of Chinese history. To ensure that the people were fed is the reason the government tolerated the implementation of the household contract system in the late 1970s. Since the onset of reform, the total amount of grain produced in China has met the people's needs, despite some fluctuations. However, China lacks arable land, and the amount of arable land it does have is affected by infrastructure construction and non-agrarian industry development. China's growing population and the improvement in food consumption structure will lead to an increase in the demand for grain. Whether China can produce enough grain and whether it can regulate production fluctuations through international markets without imposing too much of an adverse effect on other regions in the world will become important questions. If the problem is not be effectively addressed, China will be unable to maintain rapid economic growth

7. Deflation after 1998

From the beginning of 1998 to the present day, the Chinese economy has encountered a deflation. The monthly wholesale price index of production materials, compared to the index in the same period of the previous year, has been falling. The monthly retail price index, compared to the same period of the previous year, has also been falling. In 1998, 1999 and 2000, the yearly retail price index dropped, respectively, by 2.6%, 3.0% and 1.5%. Accompanying the drops in price index was the slowdown in the economic growth rate. The gross domestic product (GDP) growth rate reached only 7.8% in 1998, 7.1% in 1999, 8.0% in 2000 and 7.3% in 2001, all lower than the average 9.5% of the past 23 years.

Chinese economy has never encountered the problem of deflation in the past. Once a deflation occurs in an economy, it is often very difficult for the economy to regain dynamic growth. However, in the past two decades, the main feature of the Chinese

economy was rapid growth. The old system was reformed in a period of rapid growth so that it was possible for everyone to gain from the reform, and the friction of and resistance to reform was reduced. This is the key to China's successful reform of the past 20 years. Keeping the economic growth at a high level is essential to the completion of the complicated social and economic reform in China. Therefore, if the current deflation cannot be eliminated soon, China may not be able to complete the transition to a market economy smoothly.

8. Challenges of WTO Accession

After 15 years of effort, China has finally become a formal member of the World Trade Organization (WTO) on 10 December 2001. The basic spirit of the WTO is to lower tariff rates, to eliminate non-tariff barriers, and to allow market entries so that production could be allocate globally according to the principle of comparative advantage. Top Chinese leaders regard the WTO accession as the second most important change in China's economic policy regime, following Deng Xiaoping's reform and open-door policy in 1978. Some analysts are very positive about the accession. They believe that any drawback will be overwhelmed by the efficiency gains, injecting new growth impetus into China's reform and economic development. However, China's transition to a market economy has not complete. In its economy there exist many sectors which are not competitive. It is also possible that the market competition after the WTO accession may do more harm than good to the Chinese economy, even causing the bankruptcy of economy and the disintegration of society.

How the eight aforementioned issues are dealt with will have a critical effect on whether China will be able to maintain long-term rapid economic growth in the 21st century. The exacerbation of any one of the problems may lead to the collapse of the national economy. Moreover, the issues are closely linked. These problems need to be taken seriously as we investigate the prospects of economic development and the road toward further reform. We will

explore the first six issues in more depth in Chapters 7 and 8. Chapters 9 and 10 will be devoted separately to the issues of deflation and WTO accession.

1.3 Key Questions

The miracle that has unfolded in China as a result of economic reform and development since the late 1970s has received worldwide attention. Why was China able to catch up so fast and to achieve such tremendous economic progress in just two decades or so? Will China be able to maintain its rapid growth? These are questions that everyone — Chinese and otherwise — would like answered. China is a developing transitional economy. The nature of its experiences in development and reform and the question of whether the experiences have general implications are of great interest to other economies undergoing similar types of development and transition. As Chinese economists, apart from our responsibility to our country and our desire to make professional contributions, we feel an obligation to seek answers to the following questions, and we attempt to address them in the book.

The first question is why China's economy was developing so slowly before the reform was implemented but has been developing so rapidly afterwards. To speed up economic development in order to catch up developed nations has been the dream of many Chinese leaders in recent history. Nevertheless, reality was often very different. After the founding of the People's Republic of China in 1949, the Chinese Communist Party explicitly set out to catch up with and overtake advanced economies in the West. For this purpose, China established a series of policies and institutions to maximize resource mobilization, so to divert resources into capital-intensive industries. However, in the 30 years prior to the late 1970s, the goal of economic advancement was not achieved. The living standards of the Chinese people remained at a subsistence level with almost no improvement. In the late 1970s, about 200 million farmers still lacked adequate nutrition and clothing. At the end of the decade, China began its economic reform and gradually abandoned the

traditional economic system, which was characterized by grossly suppressed product and factor prices, a rigidly planned resource-allocation mechanism, and a puppet-like micro-management institution. Since then, market mechanisms began to play an increasingly important role in resource allocation. Moreover, the economy enjoyed a historically unprecedented growth rate. Undoubtedly, reform was the catalyst for such dramatic changes. Therefore, it is important that we summarize China's reform experience and, through historical comparisons, that we identify the reasons for the slow economic growth in the pre-reform period and for the accelerated growth afterwards.

The second question is why China's reform has been slow in some areas and why the problems mentioned in the last section have recurred throughout the reform process. Up to now, China's economic reform has not been free of ups and downs. In fact, the Chinese reform and phenomenal economic growth have been accompanied by bottlenecks that hinder further growth, including inflation pressures, corruption, and the recurring vigour/chaos cycle. If the root of the vigour/chaos cycle is not eliminated, or if the cycle becomes a divergent phenomenon, China's development and reform will eventually encounter insurmountable difficulties. Therefore, we must explore the reasons behind the cycle and try to find solutions to the problem.

The third question is whether the momentum of China's reform and development can be sustained. Undoubtedly, China's reform and development have been successful over the past 22 years. However, the reform is far from complete. This makes it even harder for China to realize its potential for economic growth and to achieve top ranking in terms of world economic development. In order to achieve these goals, China must continue the reform and must maintain the development momentum. Yet, China still faces many barriers to reform and development. If these obstacles cannot be overcome, the current momentum of reform and development will not be sustainable. Thus, one of our central goals is to determine the logical direction of China's future reform and the right approach to overcoming the above-mentioned barriers.

The fourth question is why China's reform has been so successful, compared with the reforms of the former Soviet Union and Eastern European countries. The former Soviet Union and Eastern European countries were once highly centralized planned economies. Much like China, they experienced slow economic growth before the reform as a result of low efficiency and poor incentives under the traditional economic system. This is why they decided to implement economic reform. Nevertheless, the outcomes of the reforms in these countries varied greatly. During the reform process, China has moved closer and closer to a market economy. It has controlled the pressure of inflation, relaxed growth-constraining bottlenecks, and eliminated political disturbances to realize persistent and rapid economic growth. However, those countries that proclaimed the goal of establishing a completely liberalized market economy at the very beginning of their reform have not established new institutions of higher efficiency. Instead, the economic growth rates there have declined. The countries have experienced serious inflation, unemployment, and political instability. The former Soviet Union and Eastern European countries were not fundamentally different from China at the outset of their reforms, nor do they differ in their final reform objective. The most likely explanation for the dramatic dissimilarity in the reform results lies in the differences in reform approaches. Therefore, it is important for us to sum up the experiences of China's economic reform and to explore its implications for other economies undergoing reform or adjustment.