

# China's Recent Economic Performance and Future Prospects\*

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Our forecast of China's economic future is based primarily on the supply side growth accounting model. The life cycle model of household saving provides us with the most plausible explanation for a continued high rate of savings and investment. China's labor force will soon stop growing, but migration out of agriculture should have little impact on farm output while providing a steady stream of labor to the modern more productive sectors. There is also room for rapid expansion of human capital. Maintaining high productivity growth will depend primarily on strengthening currently weak institutions, notably the financial sector and, more importantly, the legal system.

**Key words** China, finance sector, future growth, labor force, legal system, productivity

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## 1. Introduction

The rapid pace of Chinese economic development over the past 27 years is well known. According to official statistics, Chinese gross domestic product (GDP) rose tenfold since 1978. There are those who believe that official statistics overstate China's rate of growth over this period, but there is also analysis that indicates that in certain ways, such as the measurement of product quality improvements, the official growth rate may understate actual performance.<sup>1</sup>

The task of this essay, however, is not so much to review the recent past but to use the experience of the past to analyze what is likely to happen to the Chinese economy over the coming decade. For that purpose, one needs a framework that can build on past trends to project into the future. Much of what has happened in the past, however, has limited utility for projecting into the future so this essay will concentrate on issues and trends that do have a use in looking forward.

The core analysis of the essay, therefore, will focus on the key inputs that helped make high GDP growth possible using the growth accounting framework but not actually making a formal calculation of the sources of the growth. Instead I will focus on how and why the rate of both human and physical capital grew so rapidly and whether both

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capital and labor inputs were or were not used with increasing efficiency. Because of the critical role of productivity in both China's past performance and in its likely future economic performance, the latter part of this essay will focus on whether China's current market supporting institutions are capable of sustaining this growth of productivity or whether these institutions are so flawed and so difficult to reform that China's growth is likely to slow in the decade ahead. The importance of these institutions to growth is further underlined toward the end of this essay when I explore the problems China may have in sustaining the growth in aggregate demand, particularly the growth of demand for exports.

In this essay I will not attempt to deal with how political changes might influence economic growth. Arguably political changes such as a transition to a multi-party democracy could have a profound impact on growth, more so than any of the economic variables that I will discuss. To analyze the future path of political change in China and the impact of those changes on growth, however, would require a very different paper.

## **2. A Brief Overview of Past Policy and Institutional Changes**

In the popular literature China's high rate of growth over the past quarter of a century is sometimes referred to as a "miracle", but, if it were truly a miracle, we by definition would have little to say about either the past or the future. What has happened in China, however, is not a miracle in that sense. After years of attempting to follow the autarchic growth model of the Soviet Union, China finally broke away from that model and began attempting to follow a development path similar to the one that has been pursued so successfully by China's neighbors, notably Japan, South Korea, and Taiwan. China also managed to achieve a long period of political stability unlike the pre-1978 decades that witnessed the major disruptions of the Great Leap Forward (1958–1960) and the Cultural Revolution (1966–1976). As I wrote a quarter of a century ago, once China stopped doing so many things wrong in the economic sphere, growth was bound to accelerate (Perkins, 1981).

Economists will debate for years to come which measures made the biggest difference in accelerating China's growth from an average of 3.6% per year prior to 1978 to more than 9% a year since, but the core explanations all have one thing in common. Each major reform involved dismantling one or another of the key components of China's Soviet-style centrally planned command system and the dismantling of each component was followed by a spurt in output and productivity in the sector involved.

However the measures of the past quarter of a century, important as they have been, tell us little about whether the high growth achieved to date will continue for another decade or longer. Many of the measures that made rapid growth possible in the past no longer contribute significantly to current let alone future growth. The movement to household agriculture, for example, led to a marked acceleration in agricultural growth after 1978 through 1984 but then the growth rate of agricultural value added reverted to the much slower long-term trend rate.<sup>2</sup> The movement to free up the market for industrial inputs that began in late 1984 was a central element in what led to the rapid development of township and village enterprises (TVEs), but growth of TVEs also slowed markedly by

the mid-1990s. The opening to foreign direct investment (FDI) got off to a slow start throughout the 1980s but then accelerated rapidly in the 1990s. However, will FDI continue to grow rapidly or will it level off at something not far above the current level? The latter seems more likely than the former.

It should also be noted that China's high growth rate since 1978 has been marked by bouts of high inflation (in 1988–1989 and 1993–1995) that have forced the government to undertake measures to slow GDP growth in order to get control of the increase in prices. There has been little inflationary pressure in more recent years, but, even if there were a renewal of such pressures, the slowdown might increase the instability of China's GDP growth projections, but it probably would not slow the overall average growth rate of GDP.

To be able to talk about the future, therefore, we need a framework that focuses on long-term trends of the recent past that can be plausibly projected into the future. The framework of choice here on the supply side is the growth accounting framework used by many mainly for purposes of understanding the past. I will use it to try to understand the possibilities for the future.

### 3. The Sources of Growth on the Supply Side

Supply side analysis of the sources of growth starts with a simple aggregate production function and this function is then converted into the standard growth accounting equation,

$$g_y = w_k g_k + w_l g_l + a \quad [1]$$

where the  $g$ 's are the growth rates of GDP, the capital stock, and employed labor, the  $w$ 's are the shares of capital income and labor income in national income, and  $a$  is the residual that measures total factor productivity growth. What follows is a review one by one of the performance of these variables starting with the growth rate of the capital stock.

#### 3.1 The Growth of the Capital Stock

China has had a high rate of investment for a long time pre-dating the beginning of the reform period in 1978. The official figures indicate that China had a gross capital formation rate of 34.5% of GDP during the 9 years preceding the beginning of reforms (National Bureau of Statistics, 1999; p. 6). The rate in the 1980s averaged a similar 35.4% per year and then rose to 38.5% of GDP in the 1990s and 39.0% during the first 4 years of the twenty-first century. Put succinctly, China has had a very high rate of investment by international standards.<sup>3</sup>

Before one jumps to the conclusion that the Chinese growth story is primarily a tale of high rates of investment, it is important to remind the reader that high rates of investment in the 1970s did not produce high rates of GDP growth. The major changes in the reform period had little to do with any effort to raise the rate of capital formation. The acceleration in growth occurred because of changes elsewhere and that acceleration in growth led to a more rapid increase in the capital stock. The story, therefore, is the reverse of the usual

story that explains higher growth rates as the product of a prior more rapid growth in the capital stock. It is the prior higher growth rates of the GDP that bring about the higher growth rate of the capital stock.

In this essay there are two central questions about capital formation that need to be answered. Will this high rate of capital formation continue for another decade or longer? And, has this capital been used efficiently over the past decade and/or is it likely to be used efficiently over the coming decade?

Given that international capital markets are highly imperfect especially when it comes to developing countries, the rate of investment in China is likely to depend for some time on the rate of domestic savings in the country.<sup>4</sup> The magnitude of the high return investment opportunities in China will also affect the rate of investment and some of this investment will come from abroad as it has over the past decade. However, the great bulk of Chinese investment is supplied from domestic sources. A 39–40% gross capital formation rate in the first years of the twenty-first century translated into a total investment of well over US\$500 billion per year even at the undervalued exchange rate then prevailing. FDI, large as it was in comparison with other developing and even with developed countries, was still “only” US\$60.6 billion (in 2004).

China’s high rates of investment, therefore, have depended critically on a high rate of domestic savings. What accounts for the high rate of savings in China in the recent past and what is the outlook for the next decade and beyond?<sup>5</sup> Savings in the pre-reform years in China and also in the 1980s were largely generated by government. China, following the Soviet pattern, maintained high monopoly prices on most consumer goods manufactures, and that generated high industrial profits that were then taxed away by the government in the form of turnover and profits taxes. With the full development of a market economy for industrial products in the 1990s and the freeing up of prices of manufactures, this source of government revenue and subsequently of investment disappeared and yet the savings rate did not decline. Individuals for the most part took up the slack by increasing their savings and did so in a prodigious way. China soon became like the rest of East Asia with its very high savings rates during the periods of high economic growth.

There is as of yet no definitive study on why individual savings rates in China rose so rapidly, but the basic outline of what occurred is fairly straightforward. With the advent of a market economy, consumers not to mention many companies had to provide for their own long-term security. In the urban areas, the generous pension system that characterized the old state-owned enterprises was no longer offered to new entrants to the labor force and even many of those with pensions lost all or part of them as the enterprises where they worked went out of business or sustained steady losses. In the rural areas there never was a pension system but the commune structure did provide support for those in need all be it at a very low level, but the commune structure had disappeared. On the more positive side, goods such as consumer durables were increasingly plentiful for anyone with the money to pay and rationing of such goods had disappeared. Housing, which had been provided by the state virtually free, was privatized, and there was also a massive housing construction boom, and those who wanted to move to a bigger and better apartment had

**Table 1** China's dependency ratio\*

Census year	Population age range (% of total population)			Ratio a + c/b
	(a) 0–14	(b) 15–64	(c) ≥65	
1953	36.28	59.31	4.41	0.686
1964	40.69	55.75	3.56	0.794
1982	33.59	61.50	4.91	0.626
1990	27.69	66.74	5.57	0.498
2000	22.89	70.15	6.96	0.426

\*These data are from the population censuses as reported in National Statistical Office (1998; p. 93).

to find the money to pay for it. Education became essential for advancement to higher paying jobs, and, while most education was in public institutions, there were all kinds of fees and other expenses that families had to pay if they wanted their children to attend school particularly at the higher levels.

The individual households in China thus found themselves imbedded in a fairly typical market economy and they appear to have responded in a typical way to these market forces. More concretely something like the life-cycle model of savings appears to apply to Chinese family savings behavior as well as it does to the savings behavior of families elsewhere. The essence of that model is that families have low or no savings when they are starting a new household and have young children, save during their later working years when they no longer have children to support, and then live off of those savings after retirement.

Savings in the life-cycle model, therefore, are largely determined in statistical terms by the ratio of the number of economically unproductive members of society (the young and the old) to those who are of working age; otherwise known as the dependency ratio. In high-income countries it is common to define the working age population as those aged 15 to 64 and this will no doubt become the plausible range in China in the not too distant future. In reality throughout the past half century China's working age population was more plausibly aged 16 to 55 but it is difficult to construct a consistent age structure over the various censuses from readily available sources so I have used the 15 to 64 data. The trends over time will look much the same whichever age structure is used although the dependency ratio will be higher using the more restricted working age cohort. The relevant data are presented in Table 1.

As the Table 1 makes clear, the dependency ratio has declined markedly since the early 1960s. The population boom began in the 1950s as China got control of infant and child mortality and the number of children grew rapidly as a result. Beginning in the early 1970s, however, China's government made a decision that further increases in population were not desirable and instituted the one child per family policy that was designed to curb population growth in China altogether by the beginning of the twenty-first century. The

percentage of the population below age 15 plummeted as a result. The retired portion of the population, whether leaving the workforce occurred at either 55 or 65 or some year in between, was all born prior to 1949 when infant and child mortality were high and war took a toll on adults and children as well. Thus these age cohorts have remained small throughout the past half century. Hence the dependency ratio fell to a very low level in recent years because fewer children were being born and the older part of the population outside the workforce was still very small.

That situation is going to change and change dramatically, but not in the next 10 years. The older cohort outside of the workforce is now growing rapidly in part because life expectancy in China is much higher than in the past, but even more because the babies that were part of the boom that began in the 1950s and continued through most of the 1960s (except the famine years) are now beginning to retire. At the same time, the workforce is increasingly made up of children born under the one child policy, but as of 2005 they are mainly in the 15 to 30 year old age group. The parts of the working population born before the one child policy was instituted, which is hence very large, constitutes everyone working who is aged 30 or 35 and above.<sup>6</sup>

China's dependency ratio thus should rise steadily over the next two decades and by 2025 should be quite high, but the rise will start from a low base and then accelerate. Extending the retirement age will offset this trend but only to a limited degree and this in turn will be offset by the steadily expanding share of the younger age cohorts who will stay in school until they are aged 17 to 22. This rising dependency ratio is thus likely to translate into a steadily falling savings rate in China, but that falling rate should not be pronounced in the coming decade.

Household savings, of course, is not the whole story when it comes to analyzing the likely future level of total savings in China. Savings by non-financial enterprises in China are the next largest source and government also is a net saver although government accounts on average for only around 15% of total savings (Yu, 2005). The problem is that it is difficult to forecast what is likely to happen to these categories of savings over the next decade or two. Enterprise savings comes out of undistributed profits and half of these profits in China came from five sectors (out of a total of 39 sectors), petroleum and natural gas, smelting and pressing of ferrous metals, electric power, and the manufacture of electronic equipment and of transport equipment.<sup>7</sup> Forecasting profits in these sectors alone would require one to estimate future petroleum and ferrous metal prices, the future tariff rate on motor vehicles and the rate of decline in the cost of manufacturing these vehicles, and much else. That would be a formidable exercise and is well beyond the scope of this paper. All we can do here is assume that in one way or another, these sectors will continue to generate surpluses that will continue to supplement household savings for another decade or two.

The other trend of relevance to thinking about the likely future trend in the rate of gross capital formation is the increasing openness of the Chinese capital market. China as of 2005 still had controls on capital movements across its borders but these controls were becoming steadily less restrictive and the long-term goal of the government was to get rid of these controls altogether. The level of investment in China, therefore, may become

**Table 2** Investment in fixed assets by ownership\*

Year	State (%)	Collective (%)	Individual and Other (%)
1980	82.8	5.1	13.2
1985	66.1	12.9	21
1990	66.1	11.7	22.2
1995	54.4	16.4	29.1
2000	49.8	14.6	35.3
2003	39	14.4	46.6

\*The percentages in this table were derived from data reported in National Statistical Office (2001; p. 188). There was a slight change in 1996 in the coverage of the survey of fixed assets but this change had only a minimal impact on these percentages.

partially separated from the level of domestic savings. Chinese citizens will not have to put most of their money in domestic banks or in the domestic stock market and may look for higher returns outside the country. Foreign portfolio investors, in contrast, may find the opportunities in China more attractive. All of this, however, is very speculative and probably has only limited relevance to the coming decade.

Of more relevance to the coming decade has been the continued major role of government in the implementation of this high rate of investment. The data on fixed assets in selected years by ownership category are presented in Table 2. The first thing to note about this table is the decline in the share of state investment in total fixed asset investment. State investment in this case includes investment by government bureaus directly and by state-owned enterprises. The decline in the state share, however, is not quite as rapid as the data in the table imply. The category "other" includes shareholding enterprises and most of these enterprises are still controlled by the state. Thus investment in fixed assets by the state is still well above 40% of the total investment in fixed assets.

What is the significance of this share of state investment for an understanding of China's growth over the recent past and the country's likely economic growth over the coming decade? The first point to make is that virtually all of the efforts to estimate the return to investment by ownership category indicate that the rate of return of state-owned enterprises lags behind that of both the collective and private sectors.<sup>8</sup> This statement probably also applies to investment directly out of the government budget in infrastructure. China over the past decade has had a massive road-building program and has also constructed new airports in most of the provincial capitals. Some of this construction, such as the roads in and around Beijing or those around Shanghai and in southern Jiangsu, has been built just ahead or even behind demand coming from the boom in automobile and truck use. Other highways in less developed and less congested areas, however, clearly have been built way ahead of demand. The same can be said about many of the new airports. Thus the immediate return to society of much of this construction is low.<sup>9</sup> In fact a part of

this construction was undertaken as a pump priming effort in the late 1990s designed to keep aggregate demand in the economy growing fast enough to support a GDP growth rate of 7% or more.

Given the relatively lower rate of return to state investment together with the fact that the share of state investment in the total has remained high, the economic performance of China over the past decade is all the more remarkable. China has been able to maintain a high rate of GDP growth despite the fact that up through the late 1990s roughly half of all investment and nearly half of all industry was owned or controlled by the state. The domestic private and collective sector has had to scramble for funds while the state firms received most of the loans from the banking system and yet the domestic private and collective firms grew rapidly. Foreign directly invested firms also grew rapidly but they had ready access to funds from outside China.

Continued rapid growth in the future requires one of two things. Either China has to be able to maintain a relatively high rate of return to investment in the state sector or the country must steadily reduce the size of the state sector and shift investment as much as possible to the more dynamic private sector. Given China's still considerable infrastructure needs, there will be a continuing role for the state there as it is unlikely that either the domestic or foreign private sectors will be able or find it profitable to invest in much of this infrastructure.<sup>10</sup> That said, there is every reason to believe that China will have to continue to privatize its investment if it is to continue to grow rapidly. The government does not use the word privatize, but actions by the government to withdraw from direct government control and support of state enterprises amounts to much the same thing.

### 3.2 The contribution to growth of labor

The rate of growth of China's total labor force fell to 1.2% per year over the past decade thanks largely to the one child policy introduced earlier, dropping from a rate of 2.1% in the 1970s. If China were mainly a modern industrial economy, this fall in the growth of the labor force would itself have reduced the GDP growth rate by a half a percentage point. But that is not the case in China where roughly half of the labor force still works in an agricultural sector that cannot begin to use that much labor very productively. China may not literally have surplus labor in the countryside where the marginal product of the labor is zero, but there is little question that the marginal product of that labor is very low. In 2003 there were 312.6 million people of working age doing farming on 130 million hectares of arable land or 2.4 workers per hectare (0.96 workers per acre). This figure is down from a peak of 342 million farmers in 1991 but is still a very large figure particularly given that China now has a considerable amount of laborsaving machinery (604 million kw of power in farm machinery in 2003, up from 117 million kw in 1978). The United States in contrast had a labor force in farming of 3.1 million in 1990, down from 7.2 million in 1950, farming 113 million hectares of cropland (in 1987) and producing roughly as much per hectare as farmers in China albeit with much more laborsaving machinery (U.S. Department of Commerce, 1994; p. 665).

China, therefore, has been in a position to remove large amounts of labor from the countryside without having much impact on the growth rate of agricultural output. This

migration out of agriculture when it involved movement to the cities was slow to develop because of the household registration system (the *hukou* system) and related measures<sup>11</sup> that effectively prohibited most rural to urban migration from the early 1960s through the 1970s. By the 1990s, however, the registration system was no longer used to prevent migration and workers began flooding into the cities from the countryside.

There are no official published figures for the number of migrants but unofficial estimates put the total in the cities at the beginning of the twenty-first century at more than 100 million workers. Put another way, the natural rate of increase of the population in the rural areas in the years before reform was just over 2% per year and this produced an increase in the rural population of around 15 million people per year (from the end of 1964 to the end of 1978). These huge numbers of people began entering the labor force in 1979 and would have accounted for most of the new entrants to the labor force from the rural areas through 1993. When the people born after the beginning of the one child policy began entering the labor force, the increments per year fell to perhaps 10 million potential new entrants to the rural labor force per year. In actual fact the agricultural labor force increased by only 3.2 million per year from 1978 through 1993 and then began declining by 2 million workers per year.<sup>12</sup> The implication is that some 290 million workers left farming after 1978 or simply never became farmers and either moved to work in the cities or to non-farm jobs in the countryside.

The potential rural labor force today and over the past several years is growing at around 7–8 million people a year and the number in farming is declining by 2 million per year. In addition, births 15 or more years ago in the urban areas are producing another 4 million potential entrants to the non-farming labor force each year. The non-farming workforce, therefore, could have increased by 13–14 million workers per year. In actual fact the number of workers in the secondary and tertiary sectors of the Chinese economy increased by 6.7 million per year for a labor force growth rate in those sectors of 3.8% annually. Expanding enrollments in secondary schools absorbed several million a year and universities absorbed roughly 1–1.5 million per year.<sup>13</sup>

If these trends continue over the next decade, therefore, China's non-farm workforce, most of whom move to the cities, could increase by another 70–100 million depending on what assumptions one makes about the expansion rate of senior secondary school and university enrollments, but this could be a very conservative estimate of the growth rate of the non-farm workforce. It is at least equally realistic to think that the number of farm workers leaving the farm will accelerate above the 2 million per year decline of the recent past. A decline in the existing farm workforce of 100 million over the coming decade, for example, could probably be realized without large-scale capital investments in agriculture and without materially slowing the growth rate of agricultural output.

The labor force potentially available to the secondary and tertiary sectors over the next decade, therefore, could easily be as high as 200 million. If all of these workers were in fact added to the non-agricultural labor force, that labor force would grow by over 4% per year. A growth rate of this magnitude could itself account for an annual increment to GDP growth of 2.5% per year.<sup>14</sup> However, would the non-agricultural labor force actually grow by that amount? That would depend on how fast jobs in the secondary and tertiary sectors

**Table 3** Stock of educated people (in 1000s)\*

Level of education	1964	1982	1990	2000
Primary school	196 775	355 252	420 108	451 914
Junior secondary	32 506	180 384	264 646	429 889
Senior secondary	9 162	68 345	91 137	141 089
Junior college and above	2 889	6 200	16 110	45 709
Illiterate	233 270	229 960	180 030	85 070
Total	474 602	840 141	972 031	1 153 671

\*These data are from the various censuses and the data are reported in terms of number of people per 100,000 with varying levels of education. These figures have been converted into totals for the entire population.

were created. It will also depend to some degree on the willingness of urban authorities to provide the housing and other infrastructure required by the new migrants. If the jobs and the infrastructure are there, and in many cases even if the infrastructure is neglected, there is little doubt that the migration out of agriculture to these jobs will occur. The rapid pace of urbanization that results will turn China from being a peasant dominated society to a society made up mostly of city workers and their families.

### 3.3 The increase in human capital

So far I have been talking about the contribution of the labor force to economic growth as if it were simply a matter of the number of workers regardless of their skill level. But a big part of the Chinese story has been the rapid expansion of the education of that labor force. The relevant data from the various censuses are reported in Table 3. In the early 1950s there were probably at most a few hundred thousand people in China with some university level education,<sup>15</sup> and, despite the rapid expansion of university level education in the 1950s, there were still fewer than 3 million people with that much education in 1964. Primary education by then was well on its way to covering much of the country and was basically universal by the 1980s. Junior secondary education (through eight years of schooling only) did not become formally compulsory until the 1990s and probably is not completely universal in practice even today. Secondary education at the senior level was only available to a small fraction of the population in the relevant age groups even in the 1960s. Despite the Cultural Revolution the total number of people with junior and senior secondary school education increased six- and sevenfold respectively by the early 1980s, although one can question the quality of that education. Since the early 1980s this rapid expansion in education has continued. There are now 96 million students enrolled in secondary schools of all types and that is roughly three-quarters of all people in the secondary school age group. Still there is the potential for continued expansion at the senior secondary school level and an even bigger growth potential at the university level. The percentage of the population with at least some university education is less than 4%

of the total population and current enrollment is still only about 15% of those currently of university age.

What is the significance of this rapid expansion in education for growth both in the recent past and in the future? The answer depends in part on what model of the relationship between education and economic growth that you choose. The conventional growth accounting calculation assumes that the contribution of an educated person can be measured by the difference between the wage of that educated person and the wage of someone without education. The assumption is that wage equals the marginal product of that labor and hence the contribution of that labor to GDP. If one accepts these assumptions, then the contribution of China's massive expansion in the educational level of its population probably contributed 1% or less to the growth rate of GDP in the past<sup>16</sup> and will make a comparable or lesser contribution in the future as the rate of increase in education will slow down given that the stock of educated people is so large and rapid expansion is only possible at the higher levels.

An alternative model of the contribution of education to economic growth assumes that there are large external economies or agglomeration effects that result from the expansion of education. The basic idea is that people learn from each other and the more educated the population, the more learning there is going on both inside and outside the formal school system. This relationship has long been recognized in the connection between the education of children and the educational level of their parents. It also is present in the schools because a population with a large number of educated people is more likely to have qualified teachers than a population where most adults have had little more than a primary school education if that. Outside the classroom, an engineer working in isolation in a factory or in designing a bridge is likely to be much less effective than if that engineer is interacting with other engineers with similar or different experiences.

In this writer's opinion, there is good reason to think that the standard method used to account for education's contribution to economic growth seriously understates that contribution particularly in developing countries such as China, but no one to date has found a way to measure the various externalities involved so it is impossible to quantify that added contribution. Clearly, however, China in 1949 inherited a core of educated people and it built rapidly on the core to expand education rapidly at all levels. That expansion did not produce rapid growth initially because of the turmoil and misallocation of resources that occurred in 1958–1976, but a critical building block for the future was being laid.

It is possible to imagine China achieving the first phases of its post-1978 economic boom in the absence of this across the board expansion in both the quantity and quality of education. Those phases after all emphasized industries such as textiles and shoes where the skill requirements for most workers are not high. It is much harder to see how the broad nature of China's industrialization effort in more recent years with its emphasis on everything from automobiles to information technology could have been achieved. It would be even harder to see how China could catch up to the current levels of a South Korea or a Taiwan over the next two decades in the absence of this educational effort.

### 3.4 Total factor productivity

Inputs of capital and labor, however, are only a part of the Chinese growth story. The other part of the story has to do with how those inputs were used. Were they used in increasingly more productive ways and, if so, what were the measures that made this greater efficiency possible? The typical growth accounting calculations show that total factor productivity after 1978 accounted for a quarter to a third of the growth of GDP in subsequent years.<sup>17</sup> Most of the calculations that I am aware of that estimate the sources of growth both pre- and post-1978 arrive at similar results.<sup>18</sup> By itself this would seem to imply that increased inputs tell two-thirds or more of the story. But as pointed out earlier, it was the jump in productivity that came first and lifted the rate of GDP growth and that higher rate of GDP growth in turn made it possible for a given rate of investment as a share of GDP to produce a much higher rate of growth of capital. From time to time new bursts of productivity in particular sectors (first agriculture, then TVEs, and then FDI) helped keep the high growth in both GDP and capital formation going.

The issue we are concerned with here, however, is whether those periodic bursts in productivity are likely to continue. There is no obvious new sector such as FDI or TVEs that is apparent on the horizon and will keep China moving ahead at 7–9% GDP growth per year for another decade or two. FDI, to be sure, will continue and even grow and will bring with it new technologies and better management practices that will help sustain productivity growth, but the rate of growth of this investment is bound to slow down or level off altogether; there just isn't enough FDI in the world to sustain China's high FDI growth rates of the past decade.

What then could keep China growing at something like the pace of the recent past? There are no simple or straightforward answers to this question, but, in this writer's view, the probable answer lies in how successfully China is able to complete its transition to a full market economy. Inputs and outputs from industry and agriculture today in China are mostly allocated through the market and there is a developing market for labor and for land, at least for urban land. But many of the institutions needed to support an efficient market system are either very weak or do not yet really exist in China. The remainder of this essay, therefore, will focus on several of the key institutions that China must continue to develop and improve if China is going to continue to grow rapidly and converge with the high income countries.

## 4. The Institutions of a Market Economy

There are a great many specific institutions that are relevant to the efficient functioning of a market economy and no attempt will be made in this essay to cover them all. Instead we will focus on two general types of institutions: (i) the financial system, which includes banks, stock markets, and non-bank financial institutions; and (ii) the laws that govern economic activity and, more importantly, the legal or regulatory system that enforces those laws and settles economic disputes.

Before taking up each of these categories of institutions, however, it is important to understand the context in which the Chinese legal system and regulatory system operates

today. With that as background, we can then return to how the system will have to change if the Chinese economy is to continue to rapidly modernize.

#### 4.1 The role of the Chinese state in industrial policy

When China gradually began to dismantle the Soviet-style command economy in the mid-1980s, the main effort was focused on simply removing government agencies from the process of allocating inputs and outputs. The allocation of current inputs and outputs of industry and agriculture thus was more and more governed by market forces until the role of state allocation agencies effectively disappeared by the mid-1990s. By the time of China's entry into the WTO, most quantitative controls over imports had also been removed. Thus with respect to the allocation of almost all inputs and outputs, China was a full market economy as it entered the twenty-first century.

Becoming a market economy with respect to the allocation of inputs and outputs, however, did not mean that the Chinese government played mainly a passive role in the economy. The State Planning Commission changed its name to the State Development and Planning Commission and it no longer drew up annual plans that governed what enterprises produced on a monthly or yearly basis, but that Commission retained enormous power over the approval of virtually all major investment projects, public or private. The government using these retained powers continued to pursue an active industrial policy not unlike the kinds of industrial policies pursued by Japan in the 1950s through the 1970s and South Korea from the 1960s through the 1980s (and less successfully in Malaysia in the 1980s and 1990s and Indonesia in the 1990s). Planners gave direction and support to the development of new key sectors such as automobiles and to the protection of poorly performing sectors such as the many old state-owned enterprises in China's north-east.

The methods used by the state to enforce its industrial policies included a wide range of mechanisms familiar to students of Japanese and Korean industrial policies of an earlier era. First and foremost was the state's control of the banking system and of bank lending in particular. China also used such measures as domestic content requirements for foreign direct invested enterprises and the allocation of import quotas for selected inputs that were still controlled. These latter measures have now disappeared or will soon disappear when China's accession agreement to the WTO takes full effect, but there are a myriad of other rules and regulations that will remain and that can be used to direct economic activity. China is by no means the most regulated country in the world. By developing standards it has moved to the lower end of the regulatory scale, but, by the standards of most high income countries, China is still heavily regulated. Some relevant indicators are presented in Table 4. China in this list of countries, and in the more complete list of over 100 countries, has significantly more regulatory involvement in the economy than the most market-oriented countries such as the United States and Singapore, but significantly less regulatory involvement than a highly regulated country such as Argentina or Brazil. China, in fact, is similar in the amount of its regulation to other countries that have pursued an active industrial policy in a market context such as Korea and Japan.

An activist industrial policy in Asia of the kind pioneered by Japan is controversial among economists, particularly those economists who take the desirability of having a

**Table 4** Regulatory indicators\*

Country	No. procedures to open a business	Time to open a business (days)	Flexibility of hiring (index)	Flexibility of firing (index)
United States	5	4	33	5
Singapore	7	8	3	1
Germany	9	45	63	45
Japan	11	31	39	9
Korea	12	33	33	32
China	11	46	17	57
India	10	88	33	45
Argentina	15	68	71	46
Brazil	15	152	78	68

\*These are selected data from the World Bank (2001; pp. 118–123).

perfectly competitive market economy as an act of faith. But any objective look at the experience of Japan and Korea makes it clear that this approach to development can be made to work well at least for countries in the early stages of economic growth. The problem with this kind of approach to industrial policy is that it clearly does not work well in a variety of contexts different from the situation that prevailed in Japan and Korea at the time that such policies were pursued.

Governments around the world have tried to direct industrial development through investment of state funds, through control over bank lending, and through the manipulation of controls over imports and foreign exchange. The result of these policies too often has been a poor selection of industries together with rent seeking on a very large scale. The use of the banking system to carry out industrial policy has typically led to a large accumulation of non-performing loans even in countries where those industrial policies have worked reasonably well in other respects. Such policies have also led to all kinds of industrial enterprises that survive only as long as the protective shield built up around them continues to exist. Import substitution behind protective barriers does not have to lead to an enterprise that will never become internationally competitive and able to export, but too often that is the case. When corruption becomes pervasive as a result of such policies, as is often the case, the capacity of the government to govern can itself be undermined.

Does China have the capacity to carry out a government-led industrial development effort on the pattern of earlier Japan and Korea, or is the Chinese government's activist industrial policy likely to end up looking more like Indonesia in the 1990s or perhaps Malaysia? There is no easy answer to this question but there are grounds for concern that China will not be able to efficiently follow the path of Korea and Japan over the next decade or two. The basic difference is that the Ministry of International Trade and Industry in Japan (MITI) and the government of Park Chung Hee in Korea were able on the whole to

**Table 5** Corruption perceptions index (selected countries)\*

Country†	1995	2001	2004
No. countries surveyed	41	91	146
Singapore	9.26 (3)	9.2 (4)	9.3 (5)
Hong Kong	7.12 (17)	7.9 (14)	8.0 (16)
United States	7.79 (15)	7.8 (16)	7.5 (17)
Japan	6.72 (20)	7.1 (21)	6.9 (24)
Taiwan	5.08 (25)	5.9 (27)	5.6 (35)
Malaysia	5.28 (23)	5.0 (36)	5.0 (39)
South Korea	4.29 (27)	4.2 (42)	4.5 (47)
China	2.16 (40)	3.5 (57)	3.4 (71)
India	2.78 (35)	2.7 (71)	2.8 (90)
Indonesia	1.94 (41)	1.9 (88)	2.0 (133)

\*These perception indexes are put out in various forms by Transparency International for years beginning in 1995. The data in this table were taken from the tables put out on the Transparency International website ([www.transparency.org](http://www.transparency.org)). †Values shown as score from 1 to 10 with rank in parentheses.

keep politics and rent seeking out of industrial policy decision-making. It is not that these latter two societies did not have corruption or active political interference in many decisions, but they were kept out of industrial policy decisions. These decisions were largely in the hands of technocrats who made decisions on technocratic grounds. No one observing China today would argue that decision making in the industrial sphere is largely free of political considerations. It is also quite clear that China today has a high level of rent seeking activity although it is unclear how much of that activity affects industrial policy. Transparency International data on perceptions of corruption in China in comparison with other countries are presented in Table 5.

Although there are certainly grounds for questioning the accuracy of indexes based on perceptions gathered in surveys of businessmen and others, there is little question that China, among the more successful economies, is considered one of the most corrupt. Corruption is perceived by local people to be widespread<sup>19</sup> in countries such as Malaysia and South Korea, but China is clearly in a class of countries with substantially more corruption than in those two countries. A second thing to note about this table is that the two economies in Asia that score highly on this index are the two economies that have not pursued activist industrial policies of the kind that targeted specific industries and firms, namely Singapore and Hong Kong.

A plausible hypothesis from these data is that China should move away from an industrial policy that targets particular industries and firms and requires all manner of regulatory interventions, and instead move steadily toward an industrial policy that concentrates on general support investments for industry such as improvements and expansion of the education system.

#### 4.2 The current state and future prospects of the financial system

If China does move in this direction, does it have the kinds of institutions that a more market-oriented approach requires? China's large state-owned banks, for example, are widely perceived to be among the weakest institutions in the modern sector of the economy. China prior to the reform period had a mono-bank system where the central bank and the commercial bank were part of one organization, the People's Bank of China. When China in the early 1980s separated out the commercial banks from the central bank, the government created the form of a modern commercial banking system but much of the substance of the old mono-bank system remained. One of the changes that accompanied the creation of nominally independent commercial banks was the government's decision to stop financing most investment through the government budget and instead finance such activities through the state-owned commercial banks. Decisions as to what was to be financed in this way were generally not made by the banks, however. These decisions remained in the hands of the government including local governments. Banks developed little capacity for appraising the financial viability of their commercial loans because they had little say in whether or not the loan would be made. Furthermore, they did not have to worry much about the loans going bad because it remained the responsibility of the government to finance the banks if they got into trouble.

These state-owned banks expanded very rapidly and individual savings deposits (both urban and rural) rose from RMB 106 billion in 1985 to RMB 10,062 billion in 2003 (National Statistical Office, 1991; pp. 642, 761). Loans rose from RMB 591 billion in 1985 to RMB 15,900 billion in 2003. Virtually all of these loans went to the state sector not only in the early years but also up to the present. In 2003, for example, total loans to the private sector, to individuals, and to foreign funded enterprises still came to only RMB 403 billion or 2.5% of all loans in that year. No doubt some loans to the state sector found their way to third parties that were sometimes private but, from the state banks' point of view, 97.5% of the loans were to the state sector.

The not surprising result from this approach to bank lending was that the banks began to be saddled with more and more non-performing loans. The total size of these non-performing loans at their peak has never been known with any accuracy outside of China. In 1995 official statements suggested that the non-performing loans of the four large state banks came to 22% of their loan portfolio and a statement by the incoming governor of the central bank indicated that the percentage was still rising (Lardy, 1998; pp. 121–124).

Data released by the China Banking Regulatory Commission suggest that non-performing loans in the large state banks amounted to 13.4% of the total loans in late 2004.<sup>20</sup> But even this figure implies that non-performing loans came to around RMB 2 trillion or nearly US\$250 billion at the current exchange rate.<sup>21</sup> These figures come to slightly more than 20% of Chinese GDP, down from higher figures in the mid-1990s, but still high enough to represent a substantial bank refinancing challenge.

Because these non-performing loan figures make it clear that the four large Chinese state banks would be formally bankrupt if the full magnitude of their non-performing portfolios were taken properly into account, some analysts have suggested that this is the fundamental weakness in the Chinese economy that could bring the whole system down

and end the era of rapid GDP growth. If pessimistic forecasts of this sort are meant to imply that China will not be able to successfully work its way out of this situation over time and some of the large state banks may actually collapse taking parts of the economy with them, that outcome, in this writer's opinion, is not very likely. Unlike the countries hard hit by the financial crisis of 1997–1998, China's banks do not owe large sums to foreigners in yen or dollars. The deposits of the Chinese banking system are domestic and total foreign borrowing is mostly long term and the debt service on this borrowing is a tiny fraction of rapidly growing foreign exchange receipts. China's foreign exchange reserves (US\$610 billion at the end of 2004) are more than enough to pay off all foreign debt in any case. They are also enough to refinance most or all of the non-performing loans of the large state banks if the government chose to use them that way. Thus a general collapse of the Chinese banking system similar to what occurred in Indonesia or Thailand is not very realistic.

The real danger for the Chinese banking system and for the Chinese economy lies elsewhere. That danger is that these banks will continue to loan to the least productive sectors of the economy, namely the state-owned enterprises and the government itself. Some of these bank loans are in effect welfare payments to keep at least some of the weaker enterprises afloat and their workers employed. The banks also are holders of large amounts of government bonds that have been used to construct the new roads and airports mentioned earlier.<sup>22</sup> TVEs in the past may have been able to obtain sufficient funding by drawing on the limited resources of local governments and individuals, but this is unlikely in the future to be sufficient to finance the major investments that China's large and growing sectors such as automobiles or many high technology products are likely to require. Alternatively China's rapidly growing sectors may be able to generate their own funds through rising earnings, but that remains to be seen. Certainly the prospects of China having the financing it needs to sustain high rates of growth in the decade ahead will be more likely if there is an efficient financial sector channeling the savings of the population into the most productive investments.

There is more to the financial sector than just the banks, of course. There are also the insurance companies and the stock market. The core point about the banks, however, also applies to these other financial institutions. Most of the nearly 1287 companies listed on the Shanghai and Shenzhen exchanges at the end of 2003 were majority controlled by the state. The big insurance companies are also state owned. These institutions must also become more geared to supporting the most productive sectors of the economy.

Competition from foreign banks could put pressure on domestic banks in ways that improve the performance of those domestic banks, but that result is far from inevitable. Foreign banks, for example, may stay away from competition with the large state-owned banks for small depositors and small loans. Instead the foreign banks may concentrate on the larger and more successful enterprises, a practice that is sometimes referred to as cherry picking. This may help the growth in productivity in China because some of the most successful firms will have easier access to funding. But it would also create a serious problem for the state-owned banks if they find themselves unable to compete for the business of these same successful firms and are left with the smaller and less successful ones. These

state-owned banks, as a result, could find themselves in more trouble than they are at present with unknown but certainly not positive implications for economic growth over the coming decade and beyond.

### 4.3 The legal institutions required by a market economy

Banks, however, are not the only market-supporting institutions in China that are weak. China also has an underdeveloped legal system and this refers in particular to the parts of the law and the legal system that relate to economic or commercial activities.<sup>23</sup> That China's legal system in the commercial area is weak is no surprise. In the historical period prior to 1911, the county magistrate, the lowest official of the imperial bureaucracy, served as both the executive in charge of all government affairs in the district and as the judge in criminal cases and other disputes. Commercial disputes, however, rarely came before these magistrates because it was clear to most businesses that the magistrate had interests that could conflict with attaining a fair settlement. Businesses thus preferred to settle their differences through their own guilds or other kinds of associations.

This system more or less continued until 1949 when it was replaced by a judicial system designed in the commercial sphere to deal with issues that arose in a command economy. Then in the late 1960s Mao Zedong abolished lawyers altogether and what was left of the legal system reached its nadir. Thus China's post-1978 reform period began with essentially no legal system of any relevance to the increasingly market-oriented economy.

Since 1978 China has been rebuilding the legal system in the economic and commercial sphere.<sup>24</sup> Some of the early developments were motivated by the requirements of foreign direct investors from countries in Europe and North America that were used to handling business contracts drawn up by lawyers in a way consistent in some detail with the relevant law. By the twenty-first century, as a result, there was a wide range of laws on the books that were supposed to govern activity in the economic sphere. Writing laws, however, is the easy part of creating a legal system. Enforcing those laws in an equitable, efficient, and legally correct way is quite another matter. The Chinese courts are staffed in general by people who have only limited background in the law and by none who have any real independence of the political system. Furthermore, courts have only a very limited ability to enforce their decisions.

Why does a weak judicial system matter for a market economy? For a relatively poor market economy where most of the transactions involve simple trading contracts, informal methods of enforcement that avoid the formal judicial system may be quite adequate. Certainly these informal methods worked fairly well in dealing with simple contract disputes in much of East and South-East Asia over the past century and in China during the early phases of the reform period when most foreign investment came from Hong Kong Chinese investors. But this informal approach works much less well in a complex modern market economy that is fully integrated into the international economic system. Among other reasons, the World Trade Organization and the international economic system more broadly are systems based on law and legal procedures for settling disputes. A country that can only settle disputes by informal processes between businessmen or through government executive branch fiat does not fit very well into this system.

The problems in China, however, go beyond the poor fit of China's current way of doing business with the international economic system. The lack of a competent, efficient, independent, and powerful judiciary also makes it impossible to efficiently carry out other important changes in the economic structure through the decentralized processes of the market. Instead decisions have to be pushed up to higher level government bureaucrats in the ministries or elsewhere. Two major areas of structural change of considerable importance in China today illustrate what is meant here. The first has to do with the way enterprise bankruptcy is handled. The second has to do with the management of the process of mergers and acquisitions in China today.

China has had a bankruptcy law on the books since 1986, but it was not until the latter half of the 1990s that that law began to be applied to a significant number of state enterprises. In a high income market economy bankruptcy is normally handled through the courts and overseen by judges competent in bankruptcy law. Creditors bring their case to these courts or the company in trouble itself files for bankruptcy and the parties then work out whether the firm will be restructured or liquidated in accordance with the interests of the parties involved and in accordance with the relevant laws. In China, however, these decisions are made by one component or another of the executive branch of the government. Relatively healthy firms, for example, are told to merge with and take over the management of relatively weak firms rather than declare the latter firms as bankrupt and ready for liquidation. The decisions as to who survives and who must pay off their debts is ultimately a political decision made as much in accordance with the political requirements of the nation's leadership as it is a decision based on economics or the law.

The same situation prevails with mergers and acquisitions. China today is undergoing a nationwide massive program involving the merger of individual enterprises into larger enterprises and into business groups (*jituan*).<sup>25</sup> There is no doubt that China needs to restructure the way its industries are organized through some process of this type. China's highly fragmented industrial organization results from the fact that in China in the past an enterprise was really the lowest unit in a huge economic bureaucracy. These enterprises had little autonomy of any kind and were often simply a single factory. It follows that best business practice in a modern market economy would dictate that many of these individual enterprises would merge to form more viable independent business units. In a high income market economy, however, this process would be handled by one enterprise taking over another through such mechanisms as buying up a majority of the shares in a friendly or hostile takeover. The takeover process would have to be in accordance with the relevant laws and the courts would be the final arbiters of what laws applied and how they would be applied. In China, in contrast, there are no laws and courts that oversee the process. Sometimes the companies themselves work out mutually satisfactory arrangements. At other times government officials decide that one set of firms should merge with another set.

With a system where decisions of this sort are made ultimately by or with the cooperation of government officials or politicians, protection of the rights of minority shareholders also becomes impossible. Decisions are made by senior management in collaboration with politicians, and in the absence of an effective judicial system, minority shareholders would have to go to those same politicians to hear their grievances against those same

managers. Protection of minority shareholder rights is one of the fundamental principles of a well functioning financial system. With strong minority shareholder rights, people can have more confidence when they invest in the shares of a large company that their interests will not be undermined by managers diverting assets to their personal use. A healthy corporate finance system, therefore, to an important degree requires a strong, efficient, fair, and independent judicial system or a regulatory body that carries out these same judicial functions.

Creation of an independent, competent, fair and efficient legal system, of course, is not something that can happen within a few years. It took centuries in Europe and it will almost certainly take decades in China and in many other parts of Asia. China is clearly moving in the right direction in this regard but slowly and from a very low base. Will the current pace be fast enough? There is no basis for a firm prediction, but the very size of China's economy and its increasing complexity suggests that efficient decentralized decision making based on well established rules overseen by an independent and competent legal body is highly desirable now and will be essential in the not too distant future.

## 5. Sources of Growth from the Demand Side

There is much less to say about what trends on the demand side imply for growth of GDP in China over the coming decade and beyond. The framework for looking at aggregate growth on the demand side is the standard macroeconomics equation,

$$Y = C + I + G + X - M \quad [2]$$

where  $Y$  is GDP,  $C$  is private consumption,  $I$  is private investment,  $G$  is government expenditure on both consumption and investment items,  $X$  is exports and  $M$  is imports.

The first thing to note about China's performance over the past decade from this demand side perspective is the enormous increase in exports that has occurred. Chinese exports exceeded US\$100 billion for the first time in 1994 (they were US\$121 billion in that year) and ten years later they had jumped to US\$593 billion for an average annual increase in nominal dollar terms of 17% a year. In the most recent years including 2005 that growth rate has been even higher rising by more than US\$100 billion per year. The increase in total aggregate demand from exports alone has reached a level of 7% of GDP a year although these exports have a high import content so the true net impact on aggregate demand is lower by several percentage points. Still, on the demand side, China's rapid GDP growth has been sustained to a significant degree by this expansion in exports.

Can this rate of export growth continue for another decade? It seems unlikely. Exports growing at 17% a year, a rate considerably below the export growth rate in 2004 and 2005, would lead to total Chinese exports of US\$2850 billion or an average net increase of over US\$200 billion per year, an increase every 2.5 years the size of Japan's total exports.<sup>26</sup> Technically such an increase could occur particularly given that China is now in the WTO, but politically resistance to the large adjustments around the world required to deal with rapidly rising Chinese competition are bound to lead to protectionist efforts to stem the flow as happened in 2005 in textiles.

Over the next decade, therefore, China will have to shift away from its recent dependence on export demand to sustain its high growth rate. Allowing the exchange rate to float and assuming that the result would be a revaluation of the Chinese *renminbi*,<sup>27</sup> export growth would be slowed and imports would rise, but revaluation alone, in addition to reducing or eliminating China's current account surplus, could also lead to a slower rate of growth in aggregate demand and hence in the GDP growth rate. One way to fill this potential decline in aggregate demand would be to expand deficit spending by the government, but that over time contains two problems. The first problem, discussed earlier in a different context, is that government investment is not very efficient and shifting even more funds in this direction may not be consistent with the maintenance of high growth rates. The second problem is that over time government debt would rise steadily and China could eventually find itself in a situation similar to Japan where total government debt exceeds GDP. China's current official debt levels are very low, but these official figures do not include the very large sums needed to cover such major liabilities as the refinancing of the banks and taking care of the large amount of unfunded pensions.

Increased demand, therefore, needs to shift away from both external sources of demand and from demand generated by government expenditures. That leaves private consumption and investment. But private consumption has been growing less rapidly than GDP and hence the savings rate has risen. The challenge for China will be to accelerate this spending by measures such as the continued expansion of consumer credit. Eventually the rising dependency ratio should also help, but the main rise in that ratio will not occur within the next decade.

The real need, however, is to stimulate private investment to take up the slack when export growth slows. The growth rate of private investment will depend first on whether China continues to have large numbers of attractive investment opportunities. But it will also depend on whether the financial system can fund those opportunities in an efficient way. Thus we are back to the issue of China's need to strengthen its market supporting institutions.

## 6. Conclusion

China's high rates of growth over the past quarter of a century and over the past decade in particular were the result of a rapid expansion of the key ingredients of economic growth everywhere in the world. These ingredients included a rapid increase in the capital stock particularly in the modern industrial and service sectors together with an equally if not more impressive expansion in human capital through the growth of student enrollment particularly at the secondary and university levels. Primary level enrollment was effectively universal by the 1990s so expansion there was much less rapid.

Increased inputs of physical capital and human capital, however, were not the main story of growth during the reform period that began in 1978. There were also major productivity spurts caused by the steady dismantling of many barriers to independent enterprise followed in the 1990s by the gradual creation of some of the institutional structures needed particularly by foreign investors.

However, the performance of the past is not necessarily a guide to the future. As I have attempted to show in this essay, the large increases in physical capital, human capital, and labor that have occurred over the past quarter of a century are likely to continue for at least the next decade and probably longer. Savings and investment rates and the growth rate of the non-agricultural labor force will eventually decline for reasons that are predictable today, but that is not likely to happen until two decades down the road.

The real question about the future, however, is whether China will find new ways to generate further spurts in total factor productivity. The sources of productivity growth in the past that were brought about by the dismantling the system of central planning and opening of the economy have largely run their course. On the demand side, the stimulus to growth from rapid increases in exports may also soon slow markedly and China will have to generate large increases in domestic demand instead. The recent policy shift by Beijing away from a focus almost exclusively on growth to one that takes more account of the distributional impact of that growth could slow productivity growth as well, but probably will not do so because many anti-poverty programs such as better education for the poor also contribute to productivity growth.

Further productivity growth will probably require steady and sustained improvements in the functioning of the key institutions of China's market economy and that will be harder to accomplish than were earlier efforts that mainly involved dismantling the old system. These new efforts require creating new and improved institutions starting with the financial system. More important over the long run, however, is the need for a decentralized market economy governed not by the discretionary interventions of politicians and government bureaucrats, but by rules enforced by a competent, efficient, fair and most of all independent arbitrator or judge. In short China must create a truly modern legal system in the economic sphere and this will be difficult to do given from where China is starting. Fortunately China does not need to create these modern legal and financial institutions overnight or even in a decade, but there must be steady progress to that end.

## Notes

- 1 The argument that the GDP deflator may have been overstated for China is based on the view that the deflators used do not adequately capture the changes in product quality and lifestyle that have occurred in China over the past two plus decades. Klein, Gao and Tao (2005) use a technique called the linear expenditure system developed by Lawrence Klein decades earlier to explore the implications of properly accounting for quality changes of these types. They indicate that China's growth rate could be 1% or so higher if these adjustments are made. I am indebted to Professor Klein for sending me a copy of this paper. Reiitsu Kojima has looked at the methods the National Statistical Office has used to estimate GDP and also concludes that both the absolute level and the growth rate of GDP have probably been understated (Kojima, 2002). The best-known scholarly work suggesting that Chinese GDP growth rates are overstated, referring mainly to the period of the financial crisis of 1997–1999, is by Thomas Rawski (2001). For an argument that China's official figures overstate growth to a substantial degree over an even longer period, see Young (2000). There are a great many other data issues where the direction of the bias is in both directions because of changes in definitions and the like. See, for example, the analysis of Holz (2004).

- 2 Value added of the primary sector grew by 7.2% per year in real terms in the 6 years beginning in 1979 and ending in 1984, and then fell to an average rate of 3.8% per year for the next 20 years through 2004.
- 3 There is some variation in estimates of the growth rate of China's capital stock. Most of these estimates use the perpetual inventory method which requires assumptions about the initial capital stock, depreciation rates, and deflators for annual increments to the capital stock that are only reported in current prices.
- 4 The correlation between investment and savings rates is not unique to China as Martin Feldstein demonstrated two decades ago (Feldstein, 1983).
- 5 There is a large body of literature that attempts to explain the sources of China's high savings rate. Most of this literature attempts to explain the sources of past savings while this essay is mainly focused on understanding the likely future level of savings, but many of these other studies, like in this paper, rely heavily on the life cycle model of household savings (see, for example, Wakabayashi and MacKellar, 1999; Kraay, 2000; Modigliani and Cao, 2004; Yu, 2005; and many others).
- 6 China's crude birth rate fell steadily from 1970 onwards from 33.43 per 1000 in 1970 to 24.82 per 1000 in 1974 to 19.91 per 1000 in 1978 and then leveled off and ranged from 17.8 to 23.3 in the years that followed. Source: National Statistical Office (1991; p. 80).
- 7 In 2003 total profits of all state-owned and non-state-owned enterprises above a certain minimum size were RMB 833.7 billion Yuan and the five sectors accounted for RMB 392.5 billion Yuan or 47.1% of that total (National Bureau of Statistics, 2004; p. 521).
- 8 See, for example, Jefferson, Rawski and Zheng (1992). The state sector does appear to have experienced significant productivity growth as a result of reforms. See, for example, Otsuka, Liu and Murakami (1998; p. 14).
- 9 There is no question that China will need these new highways and airports in the coming decades. As anyone familiar with the analysis of the rate of return to investment will know, however, high rates of return far off in the future have little impact on the overall rate of return to a given investment because such returns far in the future are heavily discounted.
- 10 There has been an expanding role over recent decades both in and out of China for the private sector in providing many kinds of infrastructure whereas in the first half of the twentieth century a much higher percentage of infrastructure such as roads, airports, and electric power were provided by the government.
- 11 The registration system was backed up by the urban public security officials who required visitors to the cities even for one night to register with the authorities. This police control was further backed up by the rationing of food and food coupons, which were only available to registered urban residents. Changing one's registration status from rural to urban was almost impossible for most people.
- 12 The actual decline in the labor force in farming actually began in 1991.
- 13 University enrollment from 1995 to 2003 rose by 8 million or 1 million per year but this rate accelerated to nearly 2 million per year at the end of this period. Senior secondary school enrollment rose by 1.5 million per year and junior secondary school enrollees, some of whom were potential entrants to the labor force, rose by 2.5 million per year over the same period. These figures are derived from National Statistical Office (2004; p. 779).
- 14 This estimate assumes that labor's share in income is around 60% and that most of the labor shifted out of agriculture had very low and possibly even near zero productivity given small additions of labor saving machinery.

- 15 Leo Orleans (1961; p. 143) estimated that in 1960 there were roughly 300,000 university graduates in China aged 30 and above and most of those would have been educated before 1949 (and some graduates living in 1948–49 would have died by 1960).
- 16 Using the conventional growth accounting treatment of the contribution of education to growth, China's expansion in education raised the growth rate of the labor force from around 2% (when not accounting for the rising quality of that labor force through education) to around 3% (when education is taken into account). That increase would have accounted for just over 0.5% increase in the GDP growth rate. These calculations come from a paper in process by the author of this essay together with Thomas G. Rawski.
- 17 There are estimates of total factor productivity for other East Asian developing economies that provide estimates of total factor productivity that are much lower than this, notably the estimates of Lau (1996). The Lau econometric estimates, however, indicate that the aggregate production function for these same economies showed quite large economies of scale (the coefficients that weight the growth rates of capital and labor add up to more than 1.0), while in this essay I have assumed that these coefficients add up to 1.0 and thus can be measured using the shares of capital and labor income as a percentage of national income. What, however, are economies of scale in an aggregate production function? Leaving aside more fundamental theoretical problems with aggregate production functions, economies of scale would probably result not from increasing company or plant size, but from various externalities that are particularly pronounced in rapidly growing developing countries in the early stages of growth. Thus economies of scale in the Lau estimates really have a great deal in common with total factor productivity in our estimates.
- 18 A variety of analysts have made calculations of Chinese total factor productivity using standard growth accounting techniques. I made a calculation years ago that did not include the contribution of education that estimated that total factor productivity jumped by 3% in 1977–1985 from 0.6% in the previous eleven years (Perkins, 1988; p.628); Barry Bosworth and Susan Collins, who do take education into account, show a rise of total factor productivity from 0.7 to 4.2% from 1970–1980 to 1980–1990 (Bosworth and Collins, 2003) and a careful systematic study done recently by me together with Thomas Rawski also produces a rise in total factor productivity from –1% (1958–1978) to +2.8% (1978–2004) with slight variations depending on the assumptions made in using the perpetual inventory method to estimate the capital stock and certain other assumptions to correct for some of the anomalies in the Chinese labor force and population education level data. If one used the lower GDP growth rate estimates for China of economists such as Angus Maddison, the total factor productivity growth rate for the reform period since 1978 would come down somewhat although the capital growth rate would also be reduced for those using the perpetual inventory method. There would still be a total factor productivity jump between pre- and post-1978, however, but it would not be as large.
- 19 This statement is based on recent interviews by the author with several dozen knowledgeable people in Malaysia and many years of working in Korea.
- 20 These figures were reported by *Peoples Daily Online*, (2004). Most outside observers believe that the non-performing loan total is a higher percentage than this.
- 21 Total loans of all banks at the end of 2004 were RMB 17,763 billion and most of these were made by the four large state banks (National Statistical Office, 2005; p. 48).
- 22 Chinese commercial banks at the beginning of 2005 held over RMB 400 billion in bonds, mostly Chinese government bonds.
- 23 For a more complete discussion of the issues raised in this section in the broader East Asian context, see Perkins (2004).

- 24 For surveys of the Chinese legal system since the beginning of the reform period, see Lubman (1999) and more briefly Clarke, Murrell and Whiting (2005; pp. 42–47).
- 25 For an in depth discussion of the formation of Chinese business groups and how they relate to business groups such as the *keiretsu* in Japan, see Keister (2000).
- 26 Japanese exports in 2004 were US\$565 billion (Source: JETRO webpage).
- 27 Over the one to two decade timeframe with which this paper is dealing, a revaluation of the real exchange rate seems almost inevitable. That is what has occurred in all of China's immediate neighbors as they have gone through industrialization and structural change process much like what is now occurring in China.

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