CHAPTER SEVEN

The Chinese Growth Miracle

Yang Yao
China Center for Economic Research, National School of Development, Peking University, China

Abstract

This chapter provides a review of China’s economic growth since 1978. Studying China’s economic success may shed new light on the political economy of growth, the impacts of the ascent of large countries on the rest of the world, and the relationship between inequality and economic growth. The chapter starts with a review of the characteristics of China’s economic growth and compares it with those of several similar economies. Then it shows how China’s economic success has been created by innovative institutional arrangements as well as adherence to the policy advice prescribed by neoclassical economics. After that, the chapter describes China’s export-led growth model and analyzes its causes and the structural imbalances associated with it. Lastly, the chapter presents data for income inequality in China and discusses how inequality may affect China’s prospect of avoiding the middle-income trap.

Keywords

Chinese growth miracle, Political economy of growth, Export-led growth, Global imbalances, Middle-income trap

JEL Classification Codes

O1, O5, F3, F4, D3

7.1. INTRODUCTION

The economic ascent of China since the end of the 1970s provides an interesting and challenging case for the study of economic growth. China is certainly not the only success story in recent history; the four East Asian Tigers achieved comparable, if not better, records of economic growth in their fast-growing periods; and Brazil, a large country, did almost as well as China between 1950 and 1980. Nor is China likely to be the last success story; India has been following China closely. However, studying China may offer new insights into the economics of growth in several areas, particularly those related to the political economy of growth, the rise of large countries, and the relationship between inequality and growth.

In the area of political economy, China provides an experimental site for the study of authoritarian regimes. Like several other countries during their periods of fast growth, China has been under an authoritarian regime. While the consensus in the literature is that democracy, and for that matter, authoritarianism, is neither sufficient nor necessary for
economic growth, there is an emerging interest in studying the variations among democratic and authoritarian regimes. In the case of China, its sheer size renders centralized absolute rule impossible. In the last several decades, the Chinese regime has developed various unique institutions that have helped incentivize local officials as well as held the country together. Studying those institutions may provide clues for why some authoritarian regimes are more successful than others, and from there one may draw some general implications for economic growth at large.

Related to the political economy of growth, the Chinese economy has been characterized by continuous deregulation through reforms. Two distinctive features have emerged from this process. One is that unlike other transition countries, China has managed the transition from a planning economy to a mixed economy having not only avoided major economic disruptions, but also maintained high economic growth. The other is that while China’s deregulation has been gradual, it has not suffered from the pitfall of entrenching interest-group politics that has plagued deregulation in many other countries (Murphy et al. 1992). The key to understanding China’s success may lie in the many contingent institutions that have been created as transitory institutions bridging the old and new regulatory regimes. These institutions are not perfect, but bring enough changes and at the same time cushion the shocks imposed upon the stakeholders of the old regime. Studying those contingent institutions will enrich our understanding of institutions and how they impact on economic performance.

As for the rise of large countries, China provides an example for their impacts on the rest of the world in the 21st century. There have been precedents of the rise of large countries; the rise of the United States at the end of the 19th century is the most prominent example. However, several factors make the rise of large countries in this century much different from its historical precedents. The most obvious is that the supply of fossil energy is becoming an issue today while it was not a hundred years ago, yet economic growth is still largely based on fossil energy. Even if technological progress could solve the supply problem, increasing greenhouse gas emission still calls into question whether fossil energy-based economic growth can be sustainable. The world order is also quite different today than a hundred years ago. While economic growth was confined to a small number of countries in the 19th century, today it is a global phenomenon. The “fallacy of composition” then begs the question whether export-led growth of large countries squeezes the space of growth of other countries; the rules applying to small open economies may not be readily applicable to large countries. This is no more evident in the round of global imbalances that started in the early 2000s. Like many precedents, this round of imbalances has led to a major crisis. Unlike in the past rounds, though, some large developing countries, noticeably China, have joined and altered the global production chain and become surplus countries this time. It thus becomes a question whether the world can absorb the rise of large countries in this century.

Against this background, it could be a fruitful exercise for economists to study China’s export-led growth (ELG) model. This growth model is causing tensions in the world.
In the first decade of the 21st century, China’s current account surplus has risen by an unprecedented rate and has become a mirror image of the rising current account deficit in the United States. Various theories, ranging from as simple as manipulated exchange rates to more sophisticated ones accounting for the role of finance, have been proposed in the literature to explain global imbalances. However, few of them study China as a stand-alone case, yet such an exercise can make several contributions to the theory of economic growth.

Historically, almost all large countries had current account surplus in their high-growth periods. To the extent that a current account deficit is unsustainable, it is natural to expect a fast-growing country to run current account surplus than deficit. Though it still begs intellectual exploration as to why large current account surpluses could be persistent. Short-term causes may not be good explanations because persistent current account surpluses have reoccurred many times in history. To understand the nature of global imbalances, researchers have to study long-term structural factors that have shaped the growth trajectories of emerging large countries. In this regard, China provides a contemporary sample for serious studies.

China’s structural imbalances can be summarized in three puzzles. First, there has been a secular decline of the share of household income in GDP since the mid-1990s. Second, the national saving rate has increased steadily; in particular, corporate savings have increased as fast as household savings. Third, China has become a large net exporter of capital while its return to capital is higher than in most other countries.

The starting point to understand those three puzzles is to look at the long-term structural factors. Among them, the double transition, namely, abrupt demographic transition and large-scale movement of workers from the countryside to the city, is fundamental. Due to its strict family planning policy, China’s demographic transition has been tremendously accelerated compared with similar developing countries such as India. In the meantime, fast industrialization has brought millions of people out of the countryside. A direct consequence of this double transition is unprecedented growth of an already large industrial labor force, which ought to impact on China’s growth model. In a sense, the shock brought by China’s export-led growth to the world can be traced back to the surge of China’s industrial labor force. Here is where the large-country effect kicks in. Notwithstanding its fast growth, China is barely a middle-income country and there are tremendous regional disparities in the level of income. Therefore, structural change will continue and move inland. In addition, China will still enjoy demographic dividends in the next 20 years although their size will decline. As a result, China’s episode of fast growth may be longer than its predecessors.

Fast growth may well place China on the surplus side of the global imbalances. The life-cycle theory predicts that a country’s national saving rate is proportional to its growth rate; on the other hand, the growth rate of investment would be constrained by diminishing marginal returns to capital. Therefore, a country with high growth rates would be more likely to run current account surplus.
Studying the long-term structural factors by no means, though, preempt the study of short-term factors. China’s currency peg is always an issue of hot debates. While it remains an empirically controversial question as to whether the peg has led to China’s burgeoning current account surplus, a somewhat neglected question is why the fast growth of current account surplus has not led to serious real appreciation of the Chinese yuan. Similar phenomena also happened in Japan, Germany, and the Four Asian Tigers during their fast-growing periods. Finding out the commonalities among those economies may provide new insights into the course of economic development as well as into the relationship between economic catching-up and the real exchange rate formulated by the Balassa-Samuelson effect.

In the third area, a study of China can contribute to the understanding of the relationship between inequality and economic growth. Cross-country studies have generally established a negative correlation between inequality and economic growth and there is a large body of literature on the mechanisms. However, those mechanisms are not sensitive to the stage of economic development and most of them suggest a perpetuated poverty trap. This is not consistent with the Kuznets Curve that shows growth can go hand in hand with rising inequality in the initial stage of economic growth. A more sensible approach, thus, is to take into account the stage of economic development and study the different roles of inequality in different stages of economic development. Once again, China provides a contemporary case in this regard.

Inequality has risen quickly along with fast economic growth in China; worsening income distribution seems to have not stalled economic growth in the country. The question is whether this seemingly harmonious relationship can continue in the future. Pertinent to this question is the so-called middle-income trap, namely, a situation in which a country stops its catch-up process after its per-capita income has reached the middle-income level. Will China follow some of the countries—notably some Latin American countries and the Soviet Bloc—to lose growth as it moves into the higher-middle-income group defined by the World Bank? China shares the characteristics of both the Latin American countries in their fast-growing periods and the Soviet Bloc before it fell apart in 1989. The Latin American countries were characterized with high degrees of inequality, and the Soviet Bloc, apart from its rigid political regime, suffered from an investment-driven growth model. China has both; as a matter of fact, they are interrelated in the country. Studying China may shed new insights into the understanding of the inequality-growth nexus.

This chapter is aimed at providing a synthesis of the recent literature on China’s economic growth, with more space devoted to the three areas above. Among these three areas, though, more attention will be paid to the second because it is a relatively new area. There are excellent review papers, particularly Xu (2011) and Brandt et al. (2011), dealing with the role of institutions in China’s recent economic ascent. This chapter will not repeat what those two papers have already said. On the other hand, the economic growth and
development literature has provided theories and evidence for the negative impacts of income inequality on growth and there are intensive studies on income inequality in China. This chapter will present some evidence for China’s rising income inequality and then spend more space discussing its implications for the middle-income trap.

The rest of the chapter is arranged as follows. In Section 7.2 below, we will first introduce China’s economic growth since the 1950s and compare it with some other major miracle economies. Then we will provide a review of three major features of China’s economic growth, namely, economic transition, structural change, and export-led growth. Based on the experiences of some key predecessors (Brazil, Korea, and Japan) this section will also try to extrapolate China’s economic growth toward 2020. Sections 7.3 and 7.4 provide a review of the theories and explanations of China’s high economic performance. Section 7.3 focuses on the more conventional set of explanations that resort to initial conditions, sound government policies, and correct development strategies. Section 7.4 moves on to discuss the political-economy explanations. While some of the political-economy issues (e.g. fiscal decentralization) are relatively well understood in the literature, many others are still under-researched but have the potential to generate useful results for general economics. This includes the nature of second-best institutions; interplays between the bureaucracy and the economy; and the reemerging debate of the role of the state. Section 7.5 is devoted to explaining China’s export-led growth model and discussing its sustainability. On the causes of this model, this section will emphasize the role of China’s double transition. On the sustainability of the model, this section will deal with two sets of issues. One is whether the ELG has led China to a trade trap, namely, a state in which China is trapped in exporting low value-added products. The other is whether China’s export expansion will be eventually checked by the fallacy of composition. Section 7.6 discusses China’s structural imbalance problem in the context of global imbalances. After presenting the three puzzles manifesting the problem, this section will discuss the major causes of the imbalance. Both the long-term and structural causes and short-term government policies will be discussed. In the end, implications will be drawn as to the understanding of the global imbalances. Section 7.7 presents evidence of worsening income distribution and discusses its implications for China’s long-run economic growth. In particular, this section will discuss the possibility of China falling into a middle-income trap. Lastly, Section 7.8 points out the areas that are open to further research.

7.2. ECONOMIC GROWTH IN CHINA: ACHIEVEMENTS AND FEATURES

Since the economic opening in the late 1970s, China has undergone a profound transition from a centrally planned economy to a mixed economy; in the meantime, it has managed to achieve the growth records of high-performing countries (regions). China
therefore shares commonalities with both high-performing economies and transition economies. On the other hand, China’s growth also has its distinctive features due to its historical past and some of the policies that are still implemented today.

7.2.1 China’s Economic Growth in a Historical and Comparative Perspective

In his recent book *Why the West Rules—for Now*, Morris (2011) constructs a social development index for the East and the West from 14,000 BCE to 2000 CE. For the most part, the West led the East, except between 500 CE and 1800 CE when the East took the lead. Since 1800, the Industrial Revolution has led to the Great Divergence which separated the West, characterized by a civilization based on power-driven industrial expansion, from the East that has remained agrarian for most of the last 200 years. Table 7.1, adopted from Maddison (2001), provides a comparison of China and the world in terms of population and GDP between 1700 and 2015 (estimated). Thanks to crops (corn, potato, and sweet potato) brought from the New World, China’s population soared from 1700. By 1900, it had almost tripled. Despite the wars in the first half of the 20th century, population growth accelerated although the fastest period of growth wasn’t until the wars ended in 1949. Between 1950 and 2001, China’s population more than doubled. However, this fast growth was dwarfed by global population growth, making China’s share of the world population drop from 37% in 1820, to 21% in 2001. In 1820, China’s share of the world GDP was almost as large as its share of population, making China a middle-income country by the standards of that time. Since then, China began a secular decline and by 1950,

**Table 7.1  China in comparison with the world: 1700–2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (mil.)</th>
<th>GDP (bil., 1990 international dollar)</th>
<th>Per-capita GDP (1990 international dollar)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>China</td>
<td>World</td>
<td>China</td>
</tr>
<tr>
<td>1700</td>
<td>138</td>
<td>603</td>
<td>0.98</td>
</tr>
<tr>
<td>1820</td>
<td>381</td>
<td>1042</td>
<td>0.90</td>
</tr>
<tr>
<td>1900</td>
<td>400</td>
<td>1564</td>
<td>0.43</td>
</tr>
<tr>
<td>1950</td>
<td>547</td>
<td>2521</td>
<td>0.21</td>
</tr>
<tr>
<td>2001</td>
<td>1275</td>
<td>6149</td>
<td>0.59</td>
</tr>
<tr>
<td>2015</td>
<td>1387</td>
<td>7154</td>
<td>1.16</td>
</tr>
</tbody>
</table>

*Source: Maddison (2001).*
its share of world GDP was a miserable 5%. With its per-capita GDP standing at 21% of the world average, China was definitely one of the poorest countries in the world at the time.

To Morris, who uses a century or longer time periods as his observation unit, China’s decline between 1800 and 1950 was hardly something that should be pondered upon. However, this time period has become a reference point for China’s economic growth ever since. Viewed against the decline of this period of time, China’s economic ascent since 1950 can be seen as a long-run recovery to its position in the early 1800s. When we look at the period from 1950 to 2010 under a microscope, though, we find that growth was highly uneven across time, to say the least. Figure 7.1 provides data of China’s real growth rates from 1953 to 2010 based on official statistics. Clearly, we can divide the 58 years into two periods, one before 1978, and the other after. The year 1978 was the year when China began its path to economic reform and opening. Before that year, the average growth rate was 6.5%; afterwards, the average growth rate was 9.5%. The average growth rate between 1953 and 1977 was not low, but it was probably exaggerated by the artificially high prices assigned to heavy industrial products, the bulk of industrial output at the time. More importantly, there were large fluctuations during that period. There were three dramatic cycles with several years of high growth followed by one or several years of negative growth. The first cycle began in the early 1950s and ended in the Great Famine of 1959-1962 when a decline of 28% was registered for one year (1961). The second cycle was caused by the Cultural Revolution and was almost a replay of the first cycle although the trough was shallower. The third cycle was not as abrupt as the first two, but still ended with a negative growth rate in 1976. There were also ups and downs

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1 There are doubts about the reliability of China’s official statistics issued by the National Bureau of Statistics (NBS), and there are studies providing adjusted statistics (e.g. Rawski, 2001; Young, 2003). However, the NBS is the only source that provides consistent time-series and spatially comparable data. As a result, most of the data used in this chapter come from the NBS although the Penn World Table (PWT) and the World Development Index (WDI) of the World Bank are consulted when international comparisons are made. The official data is treated with some caution in the text.
in the period 1978–2010, but there was never a year of negative growth. Clearly, reform and opening was the key to explaining the different records of performance before and after 1978. Although there have been problems with the official data, the improvement in living standards is evident in almost every corner of the country. One indicator is the growth of automobile sales. In China in 2001, only 2.35 million cars were sold; 10 years later, that figure was 18.5 million, the highest in the world.

It is a worthy exercise to compare China with other high-performing economies that have emerged since World War II. Here we choose three large countries, Brazil, Japan, and Korea, for the comparison. Using the Penn World Table (PWT) data, Figure 7.2 plots China’s per-capita GDP with those of the three countries since 1950. Among the four countries, Korea is the only country that has maintained continuous high growth rates. China only began to take off around 1980. Japan had high growth before 1990, but the rate has since considerably decelerated. However, despite the so-called “lost 20 years,”

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2 The growth rates of 1998-2001 were probably fabricated by the government (Rawski, 2001). China was severely hit by the 1997 Asian financial crisis and the economy went into deflation in the several years after. The economy did not resume high growth probably until China joined the World Trade Organization in December 2001. However, there were also under-reports in the economy, especially in the service sector where informal employment is prevalent. This has forced the NBS to revise China’s GDP figures twice in recent years, in 2005 and in 2009. The 2005 revision increased China’s 2004 GDP by 17%, most of which came from the service sector.


4 Japan was not a newcomer; its industrial foundation was laid down before the war. We include it because China’s current position in the global economy bears many similarities with Japan’s in the 1980s, and many commentators use today’s Japan as a reference for China’s future, especially when it comes to the role of long-term factors such as demography in determining China’s future growth.

5 The PWT reports two series of GDP data for China. One is close to China’s official data and the other adjusts China’s initial level of per-capita GDP and arrives in lower growth rates for subsequent years. Here we use the second series of data (China Version 2) which starts in 1952. Korean data starts in 1953.
Figure 7.3 Growth since takeoff in four countries. Source: PWT 7.0.

Japan’s per-capita income in internationally comparable terms has kept growing since 1990, primarily because Japan’s domestic price level has almost kept unchanged while the price levels in other countries have increased. Brazil experienced high growth before 1980, but real income has declined since then and did not begin to grow again until 1995. In 2009, China’s per-capita GDP was $7431 (2005 PPP constant prices), between Brazil’s income levels of 1978 and 1979, between Korea’s income levels of 1984 and 1985, or between Japan’s income levels of 1962 and 1963.

Since the four countries began to experience high economic growth in different periods, a sensible approach is to normalize the comparison by the years since an economy started high economic growth. This is done in Figure 7.3. For Brazil and Japan, 1950 is chosen as the starting year, primarily because 1950 is the earliest year for which PWT provides data; for Korea and China, 1963 and 1978 are chosen as the respective starting years. The year of 1978 is chosen for China because China started the reform and opening policy in that year. The year 1963 was chosen for Korea because the Korean economy did not take off until after General Park Chung-hee got power through a military coup in 1962. Then we compare the average growth rates of the four countries in their first 30 years of fast growth. Between 1950 and 1980, Brazil achieved a remarkable average rate of growth of 7.8%, and Japan achieved 7.7%; between 1963 and 1993, the Korean economy grew by a marvelous rate of 8.7% per annum. As a comparison, China registered an average rate of growth of 7.8% between 1978 and 2008. That is, China has been a high performer, but certainly not better than other high performers.

It is tempting to extrapolate China’s economic growth beyond 2010 using historical data. In this regard, the message delivered by Figure 7.3 is mixed. One sensible approach is to use the three other countries’ growth records since they passed China’s income level of 2009, to predict China’s future growth. Then we have two extremes for the next 10 years since a country passed China’s 2009 income level. On the one hand, Japan had an average
growth rate of 9.6% between 1963 and 1973, and Korea had a rate of 9.0% between 1985 and 1995; on the other hand, Brazil’s growth rate between 1979 and 1989 was only 3.5%. As a matter of fact, Brazil had many years of negative growth in the 1980s and 1990s and its average growth rate in the second 30 years, i.e. from 1980 to 2009, was only 2.3%. Clearly, Brazil, like many Latin American countries, fell into the middle-income trap in the 1980s and 1990s. Will China follow the track of Japan and Korea, or the track of Brazil?

Some studies cast optimistic predictions for China’s future growth. The International Monetary Fund (IMF) predicted in its April 2011 World Economic Outlook that China would continue high growth rates and by 2016, would become the world’s largest economy in PPP terms, taking 18% out of the world total. Robert Feenstra believes that IMF has underestimated the size of China’s real GDP because the prices it used were mostly from urban areas. Using the PWT data, he forecasts that China would become the world’s largest economy by 2014 (Feenstra, 2011).

Realizing that the PPP figures are subject to difficulties in comparing the living costs across countries and across time, comparing countries by the current dollar is much easier, and in a sense provides more transparent figures. Keeping this in mind, Table 7.2 compares China and the United States for 2009 and 2010 and extrapolates the two countries’ nominal GDP to 2015 and 2020 under the following assumptions: China grows by 8% per annum in real terms, the United States grows by 3% per annum in real terms; the two countries’ inflation rates are 3.6% and 2%, respectively (averages between 2001 and 2010); and the yuan appreciates against the dollar by 3% per annum. Between 2009 and 2010, China narrowed its gap with the United States by a large margin, rising from barely about one third of the size of the United States to almost 40%. Under the above assumptions, the economy of the United States would be 61% larger than China’s in 2015, and by 2020, the two economies would be almost the same size.

The assumption that China will grow by 8% per annum between 2011 and 2020 is a conservative estimation. The IMF have predicted that China’s growth rates would exceed 9% till 2016. However, there are also many uncertainties about China’s future growth. It might be incidental that Brazil fell into the middle-income trap right after it had
maintained high economic growth for 30 years, but China shared many characteristics with Brazil at that time, such as: an authoritarian government, high levels of inequality, and a large rural population. Therefore, it is not a sure thing that China could maintain high growth rates in the coming decade; the prediction presented in Table 7.2 is more indicative than reflective of inevitable outcomes.

7.2.2 Economic Transition and Growth

In the last 30 years, China has been both a developing country and a transition country. Starting in 1978, China began to move from a planning economy to a market economy. Compared with other transition countries, China’s transition has not taken the toll of declining living standards; instead, it has maintained high growth rates while finishing most of the reforms. However, China today still bears some of the characteristics of a planning economy, noticeably, investment-driven growth, high shares of manufacturing in the national economy, a large sector of state-owned enterprises (SOEs), and a heavy presence of the government in the economy. On the other hand, China also shares many commonalities of other developing economies, especially its East Asian neighbors. Most significantly, it has followed its successful neighbors to adopt the ELG model. This subsection tackles the issues of transition and economic growth; the next two subsections deal with the issues related to structural change and the ELG model.

There have been many books and scholarly articles that provide excellent accounts of China’s economic transition since 1978.7 This subsection will not repeat those accounts, but will instead focus on the relationship between transition and economic growth, bearing in mind the question why China has managed high economic growth while moving from a command economy to a market economy. High growth is not granted when a command economy is transformed to a market economy; the experiences of the former Soviet Union and Eastern European countries have shown that economic decline could follow drastic transition. The question also bears ramifications for policy reforms in other developing countries. China’s reforms did not follow a blueprint and can be best described by a meddling-through process. However, the direction of the reform was clearly toward a more market-based system, at least until the global financial crisis broke out in 2008. It would provide useful lessons for policy reforms in other developing countries once one understood how China has managed the direction right.

Before we get into the discussions, it is useful to briefly review where China stands today, after more than 30 years of reform. After finishing the rural reform that dismantled collective farming in 1984, China began to attack the two pillars of the command economy: state ownership and price controls. There were heated debates in the early 1980s on the sequence of reform. One school of thought, represented by Li, advocated a strategy to attack the first pillar, first based on the argument that a proper ownership structure is

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7 For a recent treatment, see Yao (2009) and other publications in the same series.
the foundation for a well-functioning market economy (Li, 2012). The opposite school of thought, represented by Wu, believed that ownership reform would be doomed to fail because the distortions in other parts of the command economy, particularly, the distortions in the price system, would provide wrong incentives to the enterprises (Wu, 2005). This school advocated simultaneous reforms in all fronts, putting specific emphasis on reforming the price system. The road that the reform actually took was a compromise. On ownership reform, contracts were introduced to incentivize SOE managers; on price reform, a dual-track price system was established in 1985. This system had two key components. On the one hand, prices of most consumer goods were liberalized; on the other, two tracks of prices were imposed on key inputs such as coal, oil, and steel, one still set by the government and the other set by the market. The government track was imposed on production and demand quotas while the market track was applied to outputs/purchases beyond the quotas. A producer of the key inputs could only sell its products in the market after it fulfilled its quota; likewise, an enterprise using those inputs had to buy them from the market once their demand quotas were used up. It is understandable that the market prices became much higher than the government prices and arbitrage would enrich those who had the privilege to get more quotas. However, the dual-track price system has avoided the hyperinflation that happened in the first several years after the big-bang reform in Russia and other transition countries. Shortage was endemic in the command economy; a big-bang type liberalization would almost for sure cause hyperinflation. The dual-track price system dealt with shortage in two ways. By liberalizing the prices of consumer goods, it directly attacked shortage; by controlling the prices of key inputs, it slowed down the pace of price growth. By the early 1990s, the two tracks of prices converged, and finally the dual-track price system was confined to the annals of history by the unification of the official and market exchange rates in 1994. Immediately after that, massive privatization began following a 1995 government decision to only keep several hundred large SOEs in its hand. In the decade that followed, more than 90% of the SOEs were privatized. In the meantime, a vibrant private sector emerged and became dominant in urban employment (Figure 7.4); by 2008, more than two-thirds of urban workers (including migrant workers) were employed by the private sector. Accordingly, the shares of the SOE sector have dropped to less than 30% in the national GDP and corporate profits. China is best described as a mixed economy today.

However, there are also areas that have not been thoroughly reformed. Two of them have eminent impacts on the Chinese economy. One is that the financial sector is still tightly controlled by the government, and the other is that the government itself has not been transformed and has remained as a significant player in the economy. Many of the difficulties that the Chinese economy faces today can be traced back to those two unreformed areas. We will come back to them in Section 7.6.

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8 For a full account of the dual-track price system, see Chapter 9 in Yao (2009).
In terms of the economic consequences, the Chinese transition has been far more a success than other transition countries. Figure 7.5 compares the economic growth in China and Russia between 1990 and 2009. In the first several years after the transition began in 1991, the living standard of the average Russian declined by nearly 50% and it was not until 2006 that the standard of living returned to its 1990 level. In contrast, the living standard of the average Chinese was quadrupled from 1990 to 2009. In 1990, the average Chinese had an income only 14% that of his or her Russian counterpart; in 2009, that had risen to 50%.

There are numerous studies in the literature that attempt to explain China and other transition countries’ different records of economic performance in the process of transition. It is clear that the output drop in the former Soviet Union and Eastern European countries was the result of the disorganization caused by the big-bang reform (Blanchard and Kremer, 1997). The command economy has rigid albeit well-coordinated
mechanisms to allocate resources among firms. The big-bang reform shattered those mechanisms and the market mechanism took time to reestablish. As a result, production slowed down, stopped, or even collapsed. However, several theories proposed in the literature show that structural and political factors made it impossible for the former Soviet Union and Eastern European countries to adopt a more gradual approach. Sachs and Woo (1994) argue that those countries were overindustrialized and created strong urban interests that resisted any gradual change to the state sector. In contrast, they believe that China had a weaker state sector which made reallocation of labor out of the sector possible. Qian et al. (2006a,b) explain China and Russia’s different reform strategies using the contrast between the U-form organization in Russia and the M-form organization in China. The U-form organization in Russia delineated the management of the economy by line ministries that had to coordinate with each other to undertake a reform. This makes gradual and partial reforms impossible. In contrast, the M-form organization in China created relatively self-containing local units, so local experimentation was possible and minimized the costs of failed reforms. Boycko et al. (1997) emphasize the political imperatives that had driven the big-bang reform in Russia. Although the Communist government was gone in 1991, the old communist elites still controlled the economy and could come back with the resources they controlled. Massive privatization, thus, was believed by the liberal camp as a way to destroy the political base of the old communist elites.

While the above explanations are all well-founded, they sound too deterministic and have not paid enough attention to the human factors in the transition process. What if Gorbachev had opened the market and allowed people to participate in market transactions in the early 1980s? What if he had not started political reform but instead concentrated on economic reform? What if prices had not been liberalized overnight after the communist government fell apart? What if privatization had been conducted in a more orderly manner so disorganization could be avoided? To be sure, those questions have abstracted from the historical context; nevertheless, they are highly relevant for the policy reforms in other countries. For one thing, we do not expect that dramatic political changes happen often; policy reforms are, by nature, gradual in most countries. In this regard, the Chinese experience can provide several lessons. We will come back to these in Section 7.4 when we discuss the political-economy causes for China’s economic success.

7.2.3 Uneven Structural Change

As a legacy of the command economy, the Chinese economy is heavily manufacturing centered, and as a result of that, labor movement from agriculture to the other sectors has been retarded. This is evident in Figures 7.6 and 7.7 that show the shares of the primary sector (agriculture and mining), secondary sector (manufacturing, construction, and transportation), and the tertiary sector (services) in national GDP and employment from 1952 to 2010, respectively.
Except in the early 1980s, the GDP share of the primary sector declined over time, from 50% in 1952 to 10% in 2010.\(^9\) The sector’s share of employment has also declined, but with a slower pace. In 1952, it employed 84% of China’s total labor force; by 2010, that number dropped only to 37%. This means that the productivity of the primary sector has declined relatively to the national average. In 1952, its relative productivity was 60%, i.e. 60% of the national average; in 2010, it declined to 27%. One of the causes for this

\(^9\) There was a sudden drop in the share of the primary sector in both GDP and employment in the Great Leap Forward when 40 million workers moved from the countryside to the city. Half of them were sent back to the countryside after the Great Famine. In accordance, there was a surge of the GDP and employment shares of the secondary sector in the Great Leap Forward.
decline is that the household registration system, or the *hukou* system, has impeded labor movement from the countryside to the city so the countryside has been left with too many workers. However, the *hukou* has become much less a problem since 2003 when the Hu Jintao–Wen Jiabao government lifted most of the restrictions on labor movement.\(^\text{10}\)

Another cause is that there are a larger number of part-time farmers today than in the 1950s although part-time farming itself indicates that there have not been enough pulling forces from the other two sectors to draw farmers completely out of the countryside. This leads us to the third cause, namely, the dominant role of manufacturing in China’s economic growth.

The share of the secondary sector in GDP rose before 1978; then it dropped in the 1980s, primarily because of the extraordinary growth in agriculture brought about by the rural reform. It rose again in the early 1990s and stabilized at around 47% in more recent years. The sector’s share of employment has followed a somewhat different trajectory. It rose between 1962 and 1986, but more or less stabilized around 23% between 1986 and 2002. It even began a moderate decline in the later years of this period, signaling a sign that China would follow the conventional hump curve found for the manufacturing sector in other economies. However, this trend has been reversed since 2003 when the sector’s share began to increase again. China’s accession to the World Trade Organization (WTO) played a critical role for this reversed trend. Trade liberalization has lowered China’s cost of trade by a large margin; as a result, China’s comparative advantage in manufacturing is fully played out. It is worth noting that it was since 2003 that China began to harvest a large current account surplus. We will come back to this in Section 7.6.

The share of tertiary sector in GDP had declined until China entered the reform era although its share of employment began to increase in an earlier stage. The good news is that the sector has employed more people than the secondary sector since the mid-1990s. However, its share of GDP was still lower than that of the primary sector in 2010.

A comparison with other countries can give us a better understanding of where China’s structural change stands today. Figure 7.8 shows the structural change of Korea. Two distinctions immediately emerge from the comparison of Figures 7.8 and 7.7. One is that the primary sector has been much larger in China than in Korea, and the other is that China’s tertiary sector has been much smaller than in Korea. This is true even when the secondary sector hired about the same proportion of the labor force in the respective countries. The conclusion is that China has lagged behind in moving workers from agriculture to services. On the other hand, the share of the secondary sector in Korea began to decline in 1990. As we showed before, China’s per-capita GDP in 2010 was equivalent to Korea’s between 1984 and 1985. Using this as a reference, one may expect

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\(^{10}\) China’s labor and population statistics have also been changed since then. Employment and resident status are now defined by the majority of time a person lived in a place in a year. If a person lives in a city for more than 180 days in a specific year, then he is counted as a resident in that city in that specific year. Accordingly, he is also counted as a worker in the urban sectors.
that the Chinese secondary sector would reach the turning point by 2015. However, whether this will happen critically depends on the ability of the service sector to absorb enough labor.

7.2.4 Export-led Growth

China began to adopt the ELG model in the early 1980s. At the end of the 1970s, when China began to reach out to the outside world, its leaders realized that the hail to China’s achievement under the command economy was no more than self-gloration. In particular, China had been long taken over by its neighbors, including the Mainland’s archrival, Taiwan. It was thus natural for China to adopt the model that had sent its neighbors to success. But unlike its neighbors, China is a large country, and its participation in the world system has different implications to the rest of the world. We will defer the discussion of those implications to Sections 7.5 and 7.6. Here, we would like to review some of the key features of China’s ELG.

The first feature is that trade liberalization has been a key driver for China’s export growth. As shown in Figure 7.9, there were clearly two periods in China’s trade growth, one before and one after 2001, the year China joined the WTO. In the 10 years between 1991 and 2001, China’s export grew by an average rate of 14.6% per annum; between 2002 and 2008, the rate increased to 27.3%. There was a large drop in 2009, but it was recovered in the next year. In 2010, China’s export stood at five times what it was in 2001. Joining the WTO has moved China into a completely new trade regime in which its products are subject to uniformly low tariffs around the world. With its large reserves of labor and a sound industrial base, China could quickly tap into the benefits offered by this new regime.
The second feature is that China’s ELG did not lead to large trade imbalances until 2004 when China’s trade surplus began to shoot up. As we showed in the previous subsection, there was a reindustrialization process starting around that time. This process is consistent with the explosive growth of export, but it is insufficient to explain why China should register huge trade surpluses. The financial crisis has slowed down China’s export growth; as a result, China’s surplus has also come down, from a peak of $295 billion in 2008 to $183 billion in 2010. It remains a question, though, whether this declining trend is cyclical or structural.

The third feature of China’s ELG is that it relies heavily on processing trade. The share of processing export in total export reached 60% in the late 1990s, but has since dropped, and by 2010 it was barely above 50%. One of the salient features of processing trade is that by definition it creates trade surplus. As a matter of fact, China’s entire trade surplus has been more than contributed to by processing trade since the early 1990s; that is, China’s normal trade has been running deficits in all the years. China’s processing export has very small per-unit value-added; the huge trade surplus created by processing export is mainly due to its large quantity.\(^\text{11}\) With low value-added, it has often been questioned whether processing export is a sound strategy for China to hold on to.

Lastly, contrary to the conventional notion that China exports too much, China’s export share in world total has been kept in line with its GDP share in world total, as evidently shown in Figure 7.10. In current dollars, China’s share in world GDP declined before 1990; it was only 1.62% in that year. Its share of export has increased since data began to be recorded in 1970. By the mid-1990s, the export share caught up with the GDP share; both were about 2%. Between 2002 and 2008, the export share overtook the GDP share by an average of 1% point, reflecting the extraordinary growth of export.

\(^{11}\) An often-cited case is the iPhone. While one iPhone only costs Apple $6.5 to assemble in China, out of a total production cost of $178.96, China’s total export of iPhones to the United States contributed $1.9 billion to the US’s trade deficit with China in 2009 (Xing and Detert, 2010).
in this period. In 2009 and 2010, though, the two shares were almost the same; in 2010, both were 9.3% of their respective world total. The correlation coefficient between the logarithms of the two series of shares for the period 1990 to 2010 was 0.98. Therefore, in a gravity model, China’s share of world export can be almost perfectly explained by its share of world GDP. That is, China’s export is nothing abnormal in terms of standard trade empirics.12 The extraordinary growth of export between 2002 and 2008, though, may be the result of the one-shot improvement of China’s trade regime.

What is the contribution of export to the Chinese economy? Due to its heavy reliance on processing export, export’s contribution to China’s overall GDP, including net export and the value-added created by backward and forward linkages, is very low, perhaps in the range of 10–12% (Lau et al. 2007). However, because export has been growing faster than GDP, the contribution of its growth to GDP growth is large. For example, in the period 2002–2008, export grew by an average of 27.3%, so its contribution to GDP growth was 2.73–3.28% points. That is, about 30% of China’s GDP growth in that time period can be attributed to the growth of export.

In summary, China’s growth experience since 1950 can be viewed from both a historical and a contemporary perspective. From the historical point of view, China’s economic ascent can be seen as regression to its position in the world in the early 1800s, albeit by imitating the industrialization process initiated by the West. In this process, China has benefited from the advantage of backwardness that Morris (2011) uses as one of the structural factors to explain the ups and downs in the East and West in the last 15 millennia. From the contemporary point of view, however, the advantage of backwardness does not guarantee fast catch-up; after all, catch-up has been the exception rather than the rule after World War II. The fates of human societies may be governed by some hidden rules in the long run; yet in the short run, human decisions play a more significant role in determining whether a society moves in the direction of ascent or toward the abyss of decline. In the next two sections, we will provide a review of selected theories and empirical evidence that have tried to explain why China has managed its economic ascent.

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12 In a standard gravity model, both GDP and export are in real terms. Since China’s inflation rates have been in line with the world average, using real GDP and export should not change the result very much.
7.3. THE ECONOMICS OF THE MIRACLE

The Chinese growth miracle can be explained in two ways, firstly, using more conventional economic wisdom that attempts to answer the question: what has China done right?; and the other, resorting to political-economy factors to answer the question, why has China done right? This section focuses on the first explanation, and the next section focuses on the second. We will see in this section that what China has done right is mostly consistent with the neoclassical doctrines. In particular, China had more favorable initial conditions than, say, India, when its economy began to take off in 1978; China has maintained high saving rates and investment rates along the way of economic growth without compromising technological progress; it has also made significant improvements to human capital; lastly, the government has adopted a prudent fiscal policy and has maintained macroeconomic stability most of the time. Next, we look at China’s initial conditions.

7.3.1 The Initial Conditions

In the classical Solow model, the steady state of an economy has nothing to do with its starting point. This is quite different from the models featuring technical or economy-wide non-convexities. These non-convexities often lead to multiple steady states with very different outcomes; depending on its starting point, an economy can reach different steady states. In empirical research, however, this theoretical distinction may not sound that important. In the Solow model, factors determining an economy’s steady state, such as the saving rate, population growth rate, etc. are assumed constant over time. In this sense, they are part of an economy’s initial conditions.

To begin our discussion of China’s initial conditions in 1978, it would be helpful to put the country in an international context. Table 7.3 then compares China and India around 1978. The first thing one notices is that China was a poorer country than India at the time. However, in terms of other human development indicators, China did a much

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per-capita GDP (constant $2000)</td>
<td>155</td>
<td>206</td>
</tr>
<tr>
<td>Adult literacy rate (%)</td>
<td>65.5</td>
<td>40.8</td>
</tr>
<tr>
<td>Tertiary school enrollment (% gross)</td>
<td>0.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>66</td>
<td>54</td>
</tr>
<tr>
<td>Infant mortality rate (%)</td>
<td>54.2</td>
<td>106.4</td>
</tr>
<tr>
<td>Share of manufacturing in GDP (%)</td>
<td>40.0</td>
<td>17.0</td>
</tr>
<tr>
<td>Share of manufacturing in employment (%)</td>
<td>17.3</td>
<td>13.0</td>
</tr>
</tbody>
</table>

Notes: China’s literacy rate is for 1982 and India’s literacy rate is for 1981. Sources: WDI at http://data.worldbank.org/data-catalog/world-development-indicators. India’s share of manufacturing employment is from Valli and Saccone (2008), Table 3.
The Chinese Growth Miracle

better job than India—China had a much higher adult literacy rate, a much longer life expectancy, and a much lower infant mortality rate. India scored higher than China only in tertiary school enrollment. Within the age group that was officially defined for tertiary education, 4.9% were enrolled for tertiary education in India whereas the figure was only 0.7% in China. In fact, it needed to wait until the early 2000s for China to catch up with India in this indicator. That is, China’s approach to human development was targeted on ordinary people and people’s basic needs, while India’s approach was more elitist.

Some authors attribute China’s better human development records, especially its relatively high levels of human capital achievement, to its historical and cultural roots. For example, Rawski (2011) believes that China’s economic ascent is a consequence of its long-term accumulation of human resources in historical times before 1949. In particular, he emphasizes the roles of family farming, commercialization, closely knitted social organizations, and cultural beliefs in fostering human capital accumulation in China’s historical times. This argument falls generally in line with the historian Kaoru Sugihara’s notion of “industrious revolution” which he uses to describe the mechanism behind East Asia’s long-term economic growth (Sugihara, 2003). In contrast with the West’s Industrial Revolution that expanded economic production beyond human capacities, the East has undergone an industrious revolution that intensively explored human capacities for further economic growth. Sugihara emphasizes the limited natural resources and resulted small family farming as the most important cause for East Asia to undertake the industrious revolution instead of the Industrial Revolution.

While the thesis advanced by Sugihara and Rawski has much merit to recommend, it is also worth keeping in mind that the quality of human resources was much improved in the first 30 years of the new China although human destruction, manifested in particular by the Great Famine of 1959–1961 and the Cultural Revolution between 1966 and 1969, also happened. Only half of the eligible children went to elementary school in 1952; by 1978, 98% of them did. Half of the adults were reported literate in the second census conducted in 1964; the ratio was increased to two-thirds by 1978, as Table 7.3 shows.

In addition to improvement of human development, a second favorable condition for China’s economic take-off was equality. A thorough land reform and subsequent collectivization in the 1950s had equalized landholdings among farmers. The rural reform of 1978–1984 restored family farming, but in the meantime also institutionalized equal land distribution. In the city, the low-wage policy also considerably shrank income inequality. As a result, China was one of the most equalized countries in terms of income distribution in 1978. Socially, the Communist Revolution leveled out the Chinese society. Although there were political barriers preventing vertical mobility (the hukou system was one of the most notorious), the rural gentry class and urban capital owners were completely eradicated. There was no strong social or political group in the society except the Communist Party. We will see in Section 7.4 that equality can be one of the major reasons why the

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Chinese government has been made free-to-adopt growth-enhancing economic policies in the reform era.

A third favorable condition was a sound industrial base China had established in the first 30 years. Table 7.3 shows that the manufacturing sector in China was much larger than that in India. In terms of share in GDP, China’s manufacturing sector took 40% whereas the figure was only 17% in India; in terms of share of employment, the gap was smaller, but still substantial with China’s being 17.3% and India’s being 13%.14 The Chinese manufacturing sector was also relatively more productive than the Indian manufacturing sector. Labor productivity in the Chinese manufacturing sector was 2.3 times of the Chinese national average, whereas India’s was only 1.3 times of the Indian national average.

China and India both had an old civilization and both achieved high levels of prosperity in historical times. India got independence in 1947, and China ended its half-century long internal turmoil in 1949. So how had China managed to achieve a generally better record of human development and a larger manufacturing sector than India by 1978? Table 7.3 has already hinted at the answer: China had suppressed people’s income to speed up industrialization and the improvement of other human development indicators. This is no more evident in its pursuit of the heavy-industry development strategy (HIDS).

China was basically an agrarian country in the early 1950s. In 1952, industry accounted for 20% of the national GDP and only hired 6% of the country’s total labor force (Lin et al. 2003).15 Modeled on and aided by the Soviet Union, China began a drive of fast industrialization through the HIDS. The Chinese government adopted several measures to accelerate capital accumulation in the country. First, farmers were organized into communes and had to sell their products to the state under suppressed prices. It is estimated that over ¥ 200 billion were extracted from farmers during the period 1958–1978 (Wu, 2001). Second, urban wages were set to very low levels and to solve the problem of shortage, rationing was prevalent. Third, interest rates were set to under 5% per annum to save the costs of HIDS. Fourth, the value of the yuan was set high to reduce the costs of imports of technology and equipment. Fifth, high tariffs were instituted to protect domestic industry and to generate government revenue. Lastly, heavy industries received disproportionally large amounts of investment. Figure 7.11 shows the ratio of investment between heavy industries and light industries in the period 1952–1990. Using the average of the 1980s as a benchmark for a reasonable ratio, it is clear that the heavy industrial sector was overinvested in the period of command economy, especially in the 1960s.

14 Manufacturing’s share in employment is relatively small in all countries, with the highest less than 30% in most countries (see for example Korea in Section 7.2.4).

15 China’s industrial share of GDP in 1952 was higher than India’s in 1978. So India’s lower achievement in 1978 could be a result of its lower starting point in the 1950s. However, the share of manufacturing in India in the 2000s was about 30%, lower than what China had achieved by the end of 1970s.
In general, the above policies had done more harm than good to the Chinese economy. However, the HIDS had also transformed China from an agrarian economy to one on the way to industrialization. This explains the differences between China and India in industrial development at the end of the 1970s. It is worth noting that industrial development is not just about the accumulation of physical capital, it is also about the accumulation of human capital. Although the physical capital accumulated in the era of command economy had soon become obsolete in the reform era—many companies established under the command economy went bankrupt or were sold to private companies in the 1990s—technicians and skilled workers trained in the command economy had played a critical role in the initial stage of the private sector development.

The Chinese experience fits into Gerschenkron (1962)'s theory of economic backwardness. To Gerschenkron, a backward economy can skip some of the development stages experienced by more advanced economies by adopting their advanced technologies and practices. In doing so, it would suppress consumption, invest more heavily, and rely more on state entities. To the extent that the accumulation of physical and human capital in the first 30 years laid a foundation for China’s take-off in the second 30 years, the first phase was indispensable for China.

### 7.3.2 Savings, Investment, and Productivity Growth

It is well known that China’s economic growth has relied heavily on investment. It is worth keeping in mind, though, that the investment rates—defined as the share of

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16 In a dynamic general equilibrium model featuring heavy industry’s technical and pecuniary externalities, Yao and Zheng (2008) calibrate the optimal rate and length of capital subsidies to heavy industry for China’s command economy. They also calibrate the actual rate of subsidies and find that it is 37.6%, 6.6% points higher than the optimal level. In addition, the HIDS was implemented for 25 years, 13 years longer than the optimal length.
capital formation in GDP—were already very high before 1978. They were 24.5%, 30.8%, 26.3%, and 33.0%, respectively, in the first to the fourth five-year plans. This required remarkable savings for a country with very low per-capita income. It was made possible by heavy government extraction through the command system. As a comparison, the investment rates of India—a then richer country than China—were 15–18% in the 1960s and 1970s (Cheten et al. 2006). Clearly, China fitted into Gerschenkron’s theory of backwardness more than India did. Moving into the reform era, China’s high saving rates have continued and have increased dramatically since 2000. As it will be shown in Section 7.6, the national saving rate was increased to 52% by 2010. This high rate of savings was almost unprecedented in history (except in some countries during wartime periods and in a few years of the Soviet Union).

High savings have inevitably led to high investment. China relied heavily on investment for growth under the command economy; it remains as an investment-driven economy in present days; its investment rates reached 50% of GDP after 2009. While China’s high saving rates have become an international topic in recent years, the sustainability of its investment-driven growth has already been called into question since the mid-1990s. For example, Kim and Lau (1996) have estimated the Solow residuals for East Asian economies for the period 1980–1995 and found that the contribution of technological progress, measured by the Solow residual, is negative in many economies. In particular, they have found that capital growth on average contributes to 96% of China’s economic growth whereas technological progress contributes to −1.4%. Even in Taiwan and Korea whose exports have far more technological contents, technological progress is found to have only contributed 2.5% and 1.0% to the two economies’ growth, respectively. Those results were often used to question the sustainability of the East Asian economies, and the subsequent Asian Financial Crisis seemed to have verified the doubt.

However, depending on the stage of economic development, an economy can grow without technological progress. In the framework of the Solow model, the growth rate of per-capita income is solely determined by the rate of technological progress when an economy reaches its steady state; however, growth can be driven purely by capital accumulation before an economy reaches that state. It is readily admitted that most developing economies have not reached their steady states; therefore, capital accumulation can be an important driver for economic growth.

In addition, more recent studies have found that technological progress is one of the growth drivers for the Chinese economy. Even Alwyn Young, a sarcastic critique of China’s official statistics, finds a positive growth rate for China’s non-agricultural total factor productivity (TFP) in the period 1978–1998. After accounting for growth of labor

17 The time spans of these four five-year plans were 1953–57, 1958–62, 1966–70, and 1971–75. The interim period of 1963–65 was a period of adjustment to the Great Famine. The investment rate in this period was 22.7% (Lin et al. 2003).
18 For a brief review of the literature, see Zheng et al. (2009).
Table 7.4 TFP growth in 1978–2005 (%)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>10.11</td>
<td>9.25</td>
</tr>
<tr>
<td>Capital</td>
<td>9.19</td>
<td>12.38</td>
</tr>
<tr>
<td>Labor</td>
<td>3.6</td>
<td>2.59</td>
</tr>
<tr>
<td>TFP(^{(0.5)})</td>
<td>3.72</td>
<td>1.77</td>
</tr>
<tr>
<td>TFP(^{(0.4)})</td>
<td>4.27</td>
<td>2.74</td>
</tr>
</tbody>
</table>

Notes: All data come from official sources. Labor has been adjusted by quality. TFP\(^{(0.5)}\) assumes that capital’s share is 0.5, and TFP\(^{(0.4)}\) assumes that capital share is 0.4.

Source: Zheng et al. (2009), Table 1.

(largely due to increased labor force participation), the shift of labor out of agriculture, and rising educational levels, he finds that non-agricultural labor productivity grows by 2.6% and TFP grows by 1.4% per year. Table 7.4, adopted from Zheng et al. (2009), presents another set of calculation for China’s TFP in the period 1978–2005. Between 1978 and 1995, TFP growth accounts for 42% of GDP growth; the figure declines to 30% between 1995 and 2005. This decline was largely caused by the accelerated growth of capital. As we pointed out earlier in this section, the Chinese economy experienced another wave of heavy-industry development in the early 2000s. Its effects may not be fully evident in a short period of time. Therefore, a study of more recent data is required to settle the issue.

It is noteworthy that none of the existing methods assessing technological progress has successfully accounted for the technological progress embedded in capital. It is obvious that a factory is not just adding capital to its pile of stock when it buys a new assembly line—it requires reengineering of its production process and a whole new team of workers, which are definitely part of the story of productivity growth. In this regard, it would be more illuminating to directly look at labor productivity that takes into account both TFP growth and the contribution of capital accumulation. Figure 7.12 presents data for the accumulative growth of labor productivity in both the manufacturing and service sectors for the period 1978–2009. Before 1990, the growth was minimal in both sectors. The growth since the early 1990s has been phenomenal. In the manufacturing sector, the output of one worker in 2009 was equivalent to the output of 12 workers in 1978. The growth in the service sector was less dramatic, but a worker in 2008 was still equivalent to more than four workers in 1978.

In addition to fast capital accumulation, China is experiencing fast structural change; the productivity gains from factor movements from low productivity sectors to high productivity sectors cannot be underestimated. Table 7.5, adopted from Brandt et al. (2008), presents the results of a simple growth decomposition between agriculture and non-agriculture for the period 1978–2004. In this whole period, labor reallocation from agriculture to non-agriculture contributed 24.6% to China’s overall growth. In the first
sub-period, 1978–1988, the contribution was much higher, reaching 50% of the country’s overall growth. It decreased to 11.4% in the second sub-period, 1988–2004. The high contribution in the first sub-period was mainly caused by the extraordinary growth of rural industry in that period. The gap of productivity between non-agriculture and agriculture was much larger in the second sub-period than in the first sub-period, but the rate of labor movement was significantly lower in the second than in the first sub-period.

### 7.3.3 Human Capital Formation

As we showed in Section 7.2, one of China’s achievements by 1978 was relatively higher levels of human development, including primary education. In the reform era, China has continued to improve its stock of human capital due to continuous government commitment and increased returns to education. In 1993, the government set the goal in its National Plan of Educational Reform and Development to increase government educational spending to 4% of the national GDP by the end of the 20th century. This target was missed at the turn of the century. In the new National Plan of Educational Reform and Development: 2010–2020, approved in 2010, the government pledged again to meet
the target by 2012. It is noteworthy, though, that as a share of total government spending, China’s government education spending is not low. In 2008, it was 13.8%, lower than the level in the United States, but higher than those in the United Kingdom, Japan, and the Nordic countries (Bai et al. 2010). As for the private returns to education, most studies (e.g. Zhu, 2011; Li et al. 2012) show that one more year of schooling on average increases a person’s income by 8–9%. In particular, using their twins data set, Li et al. (2012) find that the return to vocational high school education is between 19.6 and 21.9%, the return to vocational college education is between 21.5 and 23.0%, and the return to college education is between 35.7 and 40.0%. That is, the return to college education is about 10% for one additional year in school, similar to those found for the US and Europe.19

Official statistics show that school enrollment and advancement rates have increased over the years. Figure 7.13 presents data for elementary school enrollment rates and the advancement rates of each level of school to the next level for the period 1978–2008.20 While the general trend for the four indicators was improvement, there were also fluctuations. The most significant was the decline of the advancement rate of senior

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Figure 7.13 Enrollment rates and advancement rates: 1978–2008. Notes: In China, elementary schools have 6 years, and junior and senior high schools each have 3 years. There are two types of senior high schools, vocational and academic. Elementary school enrollment rate is defined as the ratio between the number of students in elementary schools and the number of children between 6 and 12 years old. Elementary school advancement rate is defined as the ratio between the number of students advancing to junior high schools and the number of elementary school graduates. Junior high school advancement rate is defined in the same way. High school advancement rate only accounts for students graduated from academic high schools. Source: China Educational Statistical Yearbook 2009. Beijing: Renmin Education Press, November 2010.

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19 In contrast, they find that the return to academic high schools is only between 4.0 and 5.4%. That is, it is between 1.3 and 1.8% for one additional year in school (China’s high schools have 3 years).

20 Note that one should not infer the junior high school enrollment rate from the elementary school enrollment rate and its advancement rate because there are drop-outs in junior high schools.
### Table 7.6  Higher education and R & D personnel and spending: 1991–2008 (1000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Undergraduates</th>
<th></th>
<th>Graduates</th>
<th></th>
<th>R &amp; D</th>
<th></th>
<th>Scientists and engineers</th>
<th></th>
<th>R &amp; D spending in GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrollment</td>
<td>Admission</td>
<td>Graduation</td>
<td></td>
<td>Enrollment</td>
<td>Admission</td>
<td>Graduation</td>
<td></td>
<td>R&amp;D activity personnel</td>
</tr>
<tr>
<td>1991</td>
<td>2044.0</td>
<td>620.0</td>
<td>614.0</td>
<td></td>
<td>88.1</td>
<td>29.7</td>
<td>32.5</td>
<td></td>
<td>228,600</td>
</tr>
<tr>
<td>1992</td>
<td>2184.0</td>
<td>754.0</td>
<td>604.0</td>
<td></td>
<td>94.2</td>
<td>33.4</td>
<td>25.7</td>
<td></td>
<td>227,000</td>
</tr>
<tr>
<td>1993</td>
<td>2536.0</td>
<td>924.0</td>
<td>571.0</td>
<td></td>
<td>106.8</td>
<td>42.1</td>
<td>28.2</td>
<td></td>
<td>243,200</td>
</tr>
<tr>
<td>1994</td>
<td>2799.0</td>
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<td>637.0</td>
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academic high schools to colleges. In the early 2000s, more than 80% of senior academic high school graduates went on to college, but the rate dropped to barely above 70% in 2008. There was a large wave of college expansion in the early 2000s (Table 7.6). One consequence of this expansion was that the starting salaries of college graduates were suppressed.\textsuperscript{21} This may explain the drop of high school advancement in the period. The effect might be larger for rural students because the cost of college education is relatively much more substantial to them than to their urban peers.

Figure 7.13 shows that most children have advanced to junior high level in recent years. Figure 7.14 then shows the enrollment rates of high schools and colleges for the period 1992–2009. The high-school enrollment rate had a dramatic increase since 2003 after the stagnation in the late 1990s, reaching 80% by 2009. The college enrollment rate has been increasing steadily and reached 22% in 2009. The government projected in its National Plan of Educational Reform and Development: 2010–2020 that the college enrollment rate would grow to 40% by 2020. Most of the growth, though, would be contributed by slower growth of population.

Compared with primary and secondary education, China’s higher education has been advancing by a much faster pace. Table 7.6 provides data for college and graduate school admission, enrollment, and graduation for the period 1991–2008. In the period, college admission and enrollment increased by a factor of 10-fold; graduate school admission and enrollment were increased by a faster pace of 15-fold. In 2008, Chinese universities produced 5 million bachelors and 344,000 masters and PhDs. This fast growth of high

\textbf{Figure 7.14} High school and college enrollment rates: 1992–2009. \textit{Notes:} The high school enrollment rate is defined as the ratio between the number of registered high school (both vocational and academic) students and the population between 15 and 17 years old; the college enrollment rate is defined as the ratio between the number of registered college students and the population between 18 and 22 years old. \textit{Source:} \textit{China educational statistical yearbook 2009. Beijing: Renmin Education Press, November 2010.}

\textsuperscript{21} Wu and Zhao (2010) use two waves of surveys (2002 and 2005) to find that the college expansion suppresses the starting salaries of college graduates by 10.5%.
education has been a strong source for the growth of China’s R&D personnel, which more than doubled in the period (columns 7 and 8 in Table 7.6). Accordingly, R&D spending as share of GDP was increased from 0.6% in 1995 to 1.47% in 2008. The government’s 12th five-year plan has set the goal to increase the share to 2.2% by 2015. This will then raise China to the rank of developed countries.

The true challenge facing China is how to increase the human capital of the 140 million migrant workers whose educational achievements are mostly at or below junior high. They are the bulk of China’s workforce. Most of them will not drop back into full-time schooling; on-job training and part-time schooling are the only choices to increase their human capital. However, the government has not paid enough attention to them. According to the National Plan of Educational Reform and Development: 2010–2020, most government educational resources will be devoted to strengthening formal education. This will prepare China for the years beyond 2020, but will basically ignore the current labor force. Not only is it wasteful, but also it entails risks for China’s ambition to upgrade its technological capacities in the next 10 years.

7.3.4 Macroeconomic Stability

One of the regularities coming out of the empirical literature of economic growth is that macroeconomic instability is detrimental to economic growth. This was why John Williamson put macroeconomic stability as the first of the ten policy recommendations that he summarized as the Washington Consensus for the restructuring of the Latin American economies after the deadly sovereign debt crisis in the 1980s (Williamson, 1990). Compared with other developing countries, China has done a good job in maintaining a stable macroeconomic environment. This has been a rare achievement if one also considers the fact that China has more or less finished the transition from the command economy to a market economy, a process that has uniformly caused hyperinflation in the other transition countries. There have been several rounds of business cycles since 1978; some of them have led to high inflation rates by the standard of the recent Chinese history, but most of them were mild compared with other developing countries.

Figure 7.15 presents China’s inflation rates between 1978 and 2010. Four periods of higher inflation rates can be identified in the figure: the early years of reform, 1988–1989, 1992–1995, and 2007–2008. The first two periods of inflation were caused by attempts to reform prices. Despite the dual-track price system, the price level still increased in the 1980s. The inflation rate reached 18% in 1988 and caused widespread panic among the population. It was also one of the driving forces behind the 1989 student movement. After economic reform was resumed in 1992, an investment frenzy began in the country and led to a sharp surge of the price level. In 1994, the inflation rate reached 24%, the highest in the People’s Republic history. Then it declined very fast and after the Asian

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22 The reform was stalled after the 1989 student movement. In the spring of 1992, China’s paramount leader Deng Xiaoping paid a visit to the south and called the party to resume reform.
Financial Crisis became negative. Deflation continued until 2003 when China entered a new round of price growth. This time it was mainly caused by China’s large current account surpluses. However, compared with the previous three waves of price growth, this wave has been much milder, indicating more sophisticated macroeconomic management by the authorities.

China’s macroeconomic stability has been helped by a generally fiscally prudent government at the central level. Figure 7.16 presents data for the central government’s deficits in the period 1995–2010 and its debts in the period 2005–2010. The central government incurred the highest deficit rates around 2000. In that year, 45% of its expenditure was...
financed by debt. This was a result of the government’s response to the Asian Financial Crisis. There was a large wave of infrastructural building after the crisis; most of China’s highways were built in that time period. The deficit-revenue ratio declined substantially to 6.5% in 2007. Then the global financial crisis led to another wave of infrastructural building although it was much milder than the first wave, where government expenditure is concerned. When we put the deficit against the national GDP, we find that the deficit-GDP ratio was substantial in the first wave but then dropped to around or under 2% since 2007. On the other hand, the debt-GDP ratio was between 17 and 18% since 2005, except in 2007.

Local governments’ fiscal situation has been more troublesome. One of the problems is that no systematic data exist to gauge the size of local deficits and debts. The Budget Law requires that local governments balance their budgets. But local governments can tap into China’s weak financial system through government-sponsored financial companies. Despite the reform in the banking sector, many banks, particularly the city commercial banks, still lend local governments’ soft loans because they do not want to offend their powerful local hosts. In addition, local governments have large amounts of assets, especially land, in their hand to collateral their borrowings, so banks often believe that it is safe to lend to local governments. By the end of 2010, the outlet of local government debts was ¥10.7 trillion, or 26% of GDP (Wu, 2012). Seventy-nine percent of the debts were loans from commercial banks. In light of the weak fiscal discipline of local governments, many people are worried about the risks of large bad loans coming from local government debts. However, there are reasons to be more optimistic than what China experienced at the turn of the century.24 For one thing, local government debts are mostly collateralized by land and infrastructure, so banks could get most of their values back in case their loans were defaulted.

In summary, there is no secret to China’s economic success from a purely economic perspective because it has adopted the right policies frequently recommended by neoclassical theory and empirics. This conclusion has a strong bearing on the debate surrounding the so-called China Model.25 The review in this section has shown that at least on the economic front, China has not created a new growth model; rather, it has converged with the common model recommended by economists for developing countries.

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24 Nonperforming loans were 25% of GDP at the time (Lardy, 1998), most of which were accumulated by local governments and SOEs over the reform period.

25 In popular and policy spheres, the debate is often framed in the contrast between the Beijing Consensus and the Washington Consensus. The first consensus is believed to feature state capitalism and an authoritarian state, and the second consensus is believed to feature free market and a democratic state (e.g. Bremmer, 2011). However, both are quite different from their original formulations. The Beijing Consensus was proposed by Joshua Ramo in 2004 (Ramo, 2004), mostly to describe how China had managed to maintain social stability with high speed of economic growth. The Washington Consensus was proposed by John Williamson in 1990 (Williamson, 1990) as a summary of ten policy recommendations for the structural adjustment in Latin America following the sovereign debt crisis.
that emphasizes high saving rates, human capital accumulation, technological progress, macroeconomic stability, and above all, a well-functioning market that protects property rights and encourages entry and innovation. The real challenge to explain China’s growth miracle, therefore, is why China has adopted the right economic policies. This obliges us to turn to the political economy of China’s economic growth.

7.4. THE POLITICAL ECONOMY OF THE MIRACLE

There have been many political-economy theories proposed to explain China’s success. To cover all of them is beyond the scope of this chapter. Instead, this section provides a selective review of those that either are actively pursued by contemporary researchers or bear implications for the current debates in the field of economic growth. Specifically, we will deal with four topics: fiscal decentralization; promotion within the bureaucracy; institutions and institutional change; and the role of the state.

7.4.1 Fiscal Decentralization

One of the puzzling features of the Chinese regime is that the country has one of the most decentralized fiscal arrangements in the world despite its one-party political system. Xu (2011) calls the Chinese regime a regionally decentralized authoritarian (RDA) regime. He provides an excellent review for the historical roots and implications of this regime. This subsection is not intended to repeat his review. Instead, we will first describe the extent of fiscal decentralization in China, then move on to a discussion of its implications for economic growth, and finally conclude the subsection by pointing out what seems like contradictions in the Chinese RDA regime.

To begin with, we realize that even in the era of command economy, the Chinese system was not totally centralized. There were two waves of decentralization before 1978, one during the Great Leap Forward, and the other during the Cultural Revolution. The first wave ended up with a disaster, but the second wave paved the way to institutionalized decentralization in the reform era. In the early 1980s, a fiscal contracting system was established between the central government and each provincial government. The central government negotiated with each province a separate revenue sharing contract and revised it on a yearly basis. This practice was then mimicked by provinces for their fiscal relationships with subordinate cities, and again by cities with subordinate counties. While the system had a large and positive effect on local economic growth, two consequences had rendered it unsustainable. One was that it was an irregular system, subject to constant changes in almost every year; and the other was that the central government’s share of revenue dropped to barely above 20% in the later years, despite its growth in the early years. As a result, a fiscal consolidation reform was conceived in 1993 and put into effect in 1994. This reform had established a tax and revenue sharing system that bears similarities with the American federal system. Three categories of taxes were defined.
They are central taxes, local taxes, and shared taxes. A new tax, the value-added tax (VAT), was introduced as a shared tax. It has been the largest tax since it was instituted. Two consequences have emerged from the reform. First, fiscal federalism was instituted in a politically highly centralized country. This mixed system was more a result of historical imperatives than of a well-designed master plan. As we will see later, however, it seems to have resolved the conundrum faced by many large developing countries regarding the central-local relationship. Second, the reform has consolidated fiscal power to the center, first through VAT of which the center takes 75%, and later through both VAT, and corporate and personal income taxes of which the center takes 50%.

Figure 7.17 presents the shares of the central and local governments in total government revenue between 1976 and 2010. By the end of the Cultural Revolution, the central government’s share of revenue was only 12%. It increased to 40% in 1984, but then began to drop again. It jumped to more than 50% in the first year of the tax reform and has since been more or less stabilized. However, the central government’s share of expenditure has followed a completely different pattern, as shown in Figure 7.18. It has been declining since 1984, and by 2010 it dropped to below 20%. So, who has financed local governments’ burden of expenditure that is way above their revenue capacities? The answer is central government transfer and extra-budgetary income such as revenue from selling land. Central government transfer has been equivalent to more than 70% of its

![Figure 7.17 Shares of central and local government in total government revenue. Source: NBS at www.stats.gov.cn.](image)

26 This is a rough description of the sharing rule. In practice, it is more complicated. For example, the central government returns part of its VAT revenue to local governments according to a formula that takes into account their base year (1993) figures and their growth rates of VAT in each year.
revenue. This raises the question: why does the central government not leave more revenue to the provincial governments in the first place? The answer is that fiscal transfer is an important leverage that the central government takes on provincial governments. Together with political control, this serves as an important mechanism to allow the central government to implement national goals.

How has fiscal decentralization helped China’s economic growth? Xu (2011) has provided an extensive review to answer this question. Not to repeat what he has said, here we highlight three factors. First and foremost, fiscal decentralization has incentivized local government officials to develop the local economy. Unlike fiscal decentralization in other countries that mostly focus on the expenditure side, China’s fiscal decentralization has been conducted on both the expenditure and revenue sides. This gives local governments the incentive not just to compete for expenditure handed down from the center, but also to maintain a continuous stream of local revenue. To do that, local governments have to create favorable local conditions to attract businesses and keep them there. Qian and Weingast (1997) believe that fiscal decentralization has created a credible commitment for the government not to grab from firms; and for that, they call China’s fiscal federalism market-preserving federalism.

The second, and often neglected role of fiscal decentralization, is that it has led to a reduction of enterprises’ tax burdens. Government revenue as a share of GDP dropped

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27 The sum of central government’s own spending and its transfer to local governments is larger than its revenue. It covers the gap by issuing public debts.

28 For example, in India, a country of federal system, local governments were responsible for 58% of expenditure with 38% of revenue in 2003 (Rao and Singh, 2004).
from 31% in 1978 to less than 20% in 1993 (Wang and Hu, 2001). It has increased to about 25% of GDP in recent years, but still quite below the levels under the command economy.

Third, fiscal decentralization has facilitated the reform process. According to Qian et al. (2006a,b), the M-form structure has allowed local experimentation and lowered the cost of reform. Yao (2009) describes China’s reform process as one comprised of continuous interactions between local experimentation and ideological adjustment in the center. China’s transition has happened without drastic political changes; to move forward, it requires changing the belief system of the ruling communist party. The party, of course, is not ironclad, but comprised of different factions whose political convictions can be quite different from each other. To persuade the hardliners inside the party, the reform-oriented factions have to show that the reform would really help the party and China as a whole. Local experiments serve exactly this purpose.

Several empirical studies support a positive relationship between fiscal decentralization and regional economic growth. For example, Lin and Liu (2000) and Jin et al. (2005) find a positive relationship between the ratio of locally retained revenue to total local revenue and local economic growth.

It is noteworthy, however, that in theory the net effect of decentralization on economic growth is not determined. While it boosts local incentives, fiscal decentralization could also put off economic growth in regions that are doing less well because of reduced central transfers and limited sharing of some key public goods across regions. It may also create regional barriers for cross-regional trade, and foster corruption. In the case of China, Cai and Treisman (2007) have put forward strong counterarguments to the theory that decentralization has contributed to the Chinese growth miracle. Contrary to the results of Lin and Liu (2000) and Jin et al. (2005), Zhang and Zou (1998) find a negative relationship between the two measures for the period 1980–1992.29 Studies of other countries also return mixed results. In fact, according to Rodriguez-Pose and Ezcurra (2011) who provide a review of the recent within-country and cross-country studies, there are more studies finding a negative relationship between decentralization and economic growth than studies finding a positive relationship. So why has decentralization generally helped economic growth in China?

7.4.2 The Promotion Tournament

In explaining the diverse performances of fiscal decentralization in the world, some recent studies (e.g. Blanchard and Shleifer, 2001; Enikolopov and Zhuravskaya, 2007; Rodriguez-Pose and Ezcurra, 2011) have directed attention to the political institutions that accompany fiscal decentralization. In particular, Enikolopov and Zhuravskaya (2007)

29 All the three studies may suffer from the problem that the retention ratio was endogenously determined. This may explain why different authors arrive at different conclusions when they study different periods. More credible studies should find a more exogenous measure for decentralization.
find in a cross-country study that the strength of the national parties significantly improves the performance of fiscal decentralization. However, administrative subordination (i.e. appointing local politicians rather than electing them) does not improve the results of fiscal decentralization. The first result falls in line with the Chinese reality. It is also consistent with Cai and Treisman (2007)’s argument that China’s economic success has to be explained by the growth-enhancing policies adopted by the central government. However, the second result is against China because subnational leaders are generally appointed in the country. To understand the Chinese case, we need to have a close look at how political institutions are interwoven with fiscal decentralization in the country. This leads us to study the Chinese bureaucracy and the promotion tournament embedded in it.

China’s civil servant system can be dated back to 1500 years ago when keju, a civil examination system, was established. The exam was mainly on the Confucian classics and as a result, the bureaucracy has been deeply influenced by the Confucian doctrines. Although keju was abolished in the early 1900s, its core ideas have been preserved. Among them, two have strong implications for contemporary China.30 The first is an elitist view of the bureaucracy, namely, to qualify as a government official, one has to be learned, capable, and virtuous. The second is a reciprocity view toward governance, namely, people are the subjects to be governed, and in return, government officials should take care of the people.31 That is, the Chinese bureaucracy has a strong flavor of meritocracy. In practice, it has two significant characteristics. First, government officials are selected from a long process in which they have to show that they are both capable and willing to serve the people and the party. For a young man who is determined to move to the very top of the hierarchy, he has to be prepared that it will take 20–30 years of hard work and a lot of luck for him to do so. Second, government officials are expected to take proactive moves to improve people’s welfare. This requirement is quite different from the accountability that a democracy imposes on its officials. Instead of holding government officials accountable to the law, the Chinese regime emphasizes the responsibility that government officials hold toward the people. There are balancing institutions, such as the legislative and law, but their roles are supplementary; the Chinese regime is clearly dominated by the bureaucracy.

Within the bureaucracy, the Chinese Communist Party (CCP) serves as both the controller and the selectorate (Besley and Kudamatsu, 2008). As the controller, the CCP sets the agenda and direction of the bureaucracy; as the selectorate, the CCP selects elites

30 For a formal treatment of the modern Confucianism and its implications for contemporary China, See Bell (2010).

31 These two views fit into what Robert Dahl calls “the guardianship view of the state” (Dahl, 1991). Dahl provides convincing arguments as to why guardianship is not consistent with a liberal view of the society. In particular, he argues that the guardian, a single virtuous ruler or a group of technocrats, cannot obtain enough information to take care of the individual needs of ordinary people. This critique has a strong bearing for the Chinese meritocracy, whose problems will be discussed in details in Section 7.6.
and determines their promotion inside the bureaucracy. A system has been developed to evaluate and promote officials. The party has a committee corresponding to each level of the government. Within each committee, the department of organization is in charge of the personnel in the jurisdiction of the corresponding government. Because the number of positions shrinks quickly when one moves up the hierarchical ladder, local officials are effectively engaged in an elimination tournament. Although the criteria of promotion are multi-dimensional, encompassing all the major concerns of the central government, such as economic growth, tax revenue, employment, social stability, and so on, what actually determine an official’s promotion invariably lie in two areas, namely, the ability to promote economic growth and the ability to solve the most urgent problem faced by the party. In light of the multi-tasking theory, this comes as no surprise: both are easy to measure and their effects are immediate.

Empirical studies have supported the role of economic growth in the promotion tournament. Li and Zhou (2005) is the first study to show the link between economic growth and promotion. They study provincial party secretaries and governors and find that those officials’ chances of getting promoted increase by 15% over the mean if their provinces’ average growth rate in their tenures is one standard deviation higher than the average. However, their results are challenged by other studies. For example, Wang and Xu (2008) find that provincial party secretaries and governors who are later promoted to the central government do not significantly outperform others; the provincial leaders who come from and then go back to the central government even underperform the average. One of the problems of studying the provincial leaders is that their promotion can be highly influenced by the center’s political preferences and political lineages. For example, Opper and Brehm (2007) construct an index of local leaders’ political connections to the members of the political bureau and find that it has a strong predicting power for their promotion whereas economic growth plays a highly insignificant role. In addition, economic growth may not be a sufficient statistic for the leaders’ personal abilities because local conditions, very diverse in China, may contribute heavily to local growth. One of the regularities observed for the promotion tournament is that top leaders in the CCP central committee are invariably promoted from coastal provinces and the two powerful cities, Beijing and Shanghai; even if they originally did not work there, they would be first moved there to prepare for promotion. Therefore, using economic growth rates to predict their promotion may only pick up the effects created by the promotion process itself.

Yao and Zhang (2011) improve the literature by studying city party secretaries and mayors in 241 cities of 18 provinces for the period 1994–2008. They utilize the leaders who were shuffled between cities to construct a large connected sample of cities and leaders. Shuffling serves to make leaders comparable across borders. Without shuffling, leaders’ abilities are bundled together with the cities’ local conditions. Although leaders having served the same city can be compared because they share the same city fixed effect, a comparison across cities is impossible. Within the connected sample, comparisons can be
made. From a leader who was moved from one city to another, one can identify the fixed effects of the two cities. Deducting the two fixed effects from the performances of the leaders having only stayed in one city, one can compare them across cities. Based on their connected sample, Yao and Zhang are able to rank all the leaders and find that the variation among the leaders is a significant contributing factor to the variation of economic growth within the sample cities. In addition, they find that leader ranking is a significant predictor for promotion: the leader of the highest ranking is 30% more likely to get promoted than the leader of the lowest ranking. However, this positive correlation is only found for mayors, not for party secretaries. This is consistent with the different roles they assume in the bureaucracy: the party secretary is in charge of the personnel, political stability, and other less economically related issues, whereas the mayor is in charge of the daily operation of the government, for which economic growth is one of the top priorities.

In summary, the CCP, through a meritocratic bureaucracy, has introduced strong career incentives to the rank of local officials so their conducts are molded to generally promote economic growth. In so doing, the CCP itself has transformed from a political party to the selectorate of the Chinese meritocracy as well as the controller of the country. What is left out is why the CCP has changed its course. In addition, the reliance on a meritocratic bureaucracy does not preempt the role of institutions. Today’s China is quite different from the country 30 years ago; much of the difference is due to institutional change as well as income growth. This is the topic of the next subsection.

### 7.4.3 Institutions and Institutional Change

The thesis that institutions matter for economic growth is widely accepted by economists although there are some disapproving arguments. To the extent that institutions are everywhere and provide incentive structures to agents, the thesis is almost tautological. The real question is why and when growth-promoting institutions are adopted in some countries but not in other countries. To a large extent, this can be boiled down to studying the efficiency hypothesis formally formulated by North and Thomas (1973): institutions evolve to explore economic gains. Following this line, Yao (2004) formally shows in the framework of implementation theory that the efficiency hypothesis does not hold under a well-behaved political process without side payments. In reality, though, the political process can be perturbed and cross-group transactions are commonly used to buy support. For example, agents may engage in a Coase bargaining to obtain the institution that maximizes the social output. This is what Acemoglu calls “the political Coase theorem” (Acemoglu, 2003). However, as convincingly argued by Acemoglu et al. (2006), the political Coase theorem rarely holds in reality because the political dynamics often does not allow for the Coase bargaining.

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32 For example, Glaeser et al. (2004) find that poor countries get out of poverty through good policies, often pursued by dictators, and subsequently improve their political institutions.
The above concise review of the literature highlights the significance of the Chinese transition for the theory of institutional change. The key to explaining China’s largely peaceful yet efficient transition from the command economy to the market economy lies in two areas. One is the sense of crisis, and the other is the contingent institutions created in the process of transition. This does not mean that other factors are not important; rather, their significance is of second order. The sense of crisis served as the catalyst for the Chinese transition, and contingent institutions have helped draw different groups to the common agenda of reform.

In the mid-1970s, the CCP leadership faced two kinds of crises: one from the outside, and the other from inside. By the mid-1970s, it was clear to the CCP leadership that China had lost the race with not only the advanced capitalist countries, but also its developing neighbors, including its runaway province, Taiwan. To the old generation of leaders, this reminded them of the old saying that had rung in their ears for decades: “Lagging behind is to get bullied by others.” This strong Darwinian belief became one of the impetuses pushing for change. Inside China, the CCP’s legitimacy was withering away. The catastrophes of the Great Famine and the Cultural Revolution had depleted the CCP’s revolutionary dividends and by the mid-1970s, its top leadership had a strong sense of crisis of legitimacy. The drop in agricultural output in 1976–1977 set the alarm that another famine would fall upon the country and led directly to the ensuring rural reform (Yang, 1998). With procedural legitimacy out of the question, the only choice left for the CCP was to gain legitimacy through performance, i.e. delivering tangible benefits to the population. Turning the party’s gravity toward economic growth thus became a national consensus under the leadership of Deng Xiaoping. The reform movement was underway.

To go with the reform, however, there were still many hurdles to overcome. To avoid engendering its own rule, the CCP had to take a gradual approach to reform. This then created two problems in the transition period. One was the resistance of the social and political groups whose interests were tied to the old institutions, and the other was the incongruence of the CCP’s own political institutions and the new economic institutions. To overcome those two hurdles, many contingent institutions were created. A contingent institution arises as a response to solve the most pressing issue facing the decision makers. For that it may have to compromise with the existing constraints governing institutional change, so it is often imperfect and will disappear or evolve when the constraints are lifted.

The dual-track price system (DPS) introduced in Section 7.2 is a prime example of a contingent institution. It was certainly not an optimal institution, but in addition to avoiding hyperinflation, it has also managed to evade the backlash of the groups with strong vested interests in the command economy. The way the big-bang approach adopted to attack this issue was fast privatization that was thought would eliminate the political bases of those interest groups (Boycko et al. 1997). In contrast, the dual-track approach provided limited protection to those interest groups, creating what Lau et al. (2000) has called a “reform without losers.”
According to Lau et al. (2000), the efficiency of the DPS lies in its two features: one is that the quotas were strictly enforced and market resale of quotas was allowed. This is quite different from the similar reform of the Soviet Union studied by Murphy et al. (1992) that was not able to enforce the quotas. Because the quota prices were lower than the market prices, firms had no incentive to produce for quotas so the dual-track system would collapse. In the Chinese case, quotas were strictly enforced. In this case, administrative discipline helped China’s DPS to succeed. On the other hand, allowing the resale of quotas eliminated the inefficiency stemming from the misallocation of quotas. However, quota resale was one of the early sources of corruption in China’s reform era. The DPS therefore provides an example of corruption through “greasing the wheels.”

The DPS disappeared in the early 1990s primarily because the market prices had converged with the quota prices. The market prices dropped because there were more and more firms supplying to the market. In particular, the township and village enterprises (TVEs) played a significant role. They were not covered by the government plan and had to rely on the market to obtain supplies and sell their products. Their growth greatly enhanced the market track. Yet they themselves were one of the contingent institutions. On legal terms, they were owned by the government, but in effect, they were jointly operated by individual entrepreneurs and the government. In fact, many of them were so-called “red hat” enterprises: they were established by entrepreneurs, but to avoid the uncertainty surrounding private firms, they were registered as township- or village-owned firms. Because of this legal ambiguity, property rights were not clearly delineated within the enterprises. By the standard theory of firm, therefore, TVEs could not have worked. Yet they flourished and contributed to 40% of the national industrial output growth at their highest point (Lin and Yao, 2001). In the 1990s, when private firms obtained a firm legal status, though, almost all the TVEs were privatized.

We can provide more examples of contingent institutions; the rural reform, SOE privatization, and the remuneration scheme for government officials all experienced stages of contingent institutions. Like the DPS, many of them created new forces demanding for less distorted institutions and as a result they disappeared in the end. One issue worth more exploration is the corruption created by contingent institutions. Yao (2004) shows that efficient institutional change is possible if side payments are allowed. Interpreting from this perspective, corruption is one kind of side payment that buys the support for reform. However, this does not tell us why economic growth has not been seriously undermined by rampant corruption. Figure 7.19 compares China with 88 other countries during the world during the period 2001–2009, in terms of corruption and economic growth. Two panels are shown in the figure. The left panel is a scatter diagram of the average growth rate of per-capita GDP against the mean corruption perception index (CPI) in the period. CPI is constructed by Transparency International by citizen surveys conducted each year. Larger values of CPI indicate cleaner governments. There is a weak negative correlation between CPIs and GDP growth rates. China is identified in the chart and is one of the
two outliers with low CPIs but high growth rates. However, the negative correlation may be caused by the correlation of CPI with a country’s initial income. To deal with this issue, the mean per-capita GDP growth rate is first regressed on a constant and the per-capita GDP in 2001, and then the residuals are plotted against the average CPIs again. Now the negative correlation vanishes, but China is still one of the few outliers at the lower end of the CPI. China’s average CPI was 3.4, qualifying it as part of the most corrupt 25% of countries. But compared with both countries with cleaner governments, and countries with equally corrupt governments, China gained a much higher average growth rate. Why has corruption not become a serious impediment to China’s economic growth?

The RDA regime certainly has helped mitigate the negative impacts of corruption. As the preceding review in this section has shown, the promotion tournament has a strong dose of meritocracy that aligns local leaders’ interests with the pursuit of economic growth. In addition, competition among different localities has placed a check on the ability of local officials to grab from the business. This check is reinforced by China’s manufacturing-based growth model. The political-economy theory of the resource curse (e.g. Bulte and Damania, 2008) asserts that resource abundance fosters a predatory state that suffocates growth. This thesis is built on two premises: the state has a monopoly on the extraction rights of natural resources, and resources, i.e., the prey of corruption, are not mobile. In a manufacturing-based economy, however, the preys are capital owners who can easily move to other places. Officials in different jurisdictions compete with

33 The other country is Iraq. Its high average growth rate was probably a result of recovery from the war.
each other; they would be very happy to take the capital driven out by their more corrupt neighbors. Empirical evidence shows that local government officials pay more attention to manufacturing growth than the growth of agriculture and services (e.g. Yao and Zhang, 2011), primarily because manufacturing does not rely much on locality-specific inputs, whereas agriculture and services do. Depending on the composition of the local economy and its reliance on locally provided inputs, therefore, there could be an equilibrium in which government officials assume the role of both a helping hand and a grabbing hand.

A general lesson emerging from China’s reform process is that developing countries may have to give up the pursuit for institutional purity and instead focus on institutional efficacy when they conduct policy reforms. Good institutions align agents’ own interests with the societal interests. But agents take actions in a web of institutions, many of which can be detrimental to economic efficiency, yet cannot be easily overturned in a short period of time because they are deeply rooted in a country’s history. Therefore, the new institutions have to adapt to the existing institutions. As a result, they may not be pure; but with a wise design, they can be effective in raising economic efficiency and creating forces supporting further reform.

7.4.4 The Role of the State
Because China has an authoritarian state, it is so easy to believe that authoritarianism is the key to understanding China’s economic success. The preceding review in this chapter has proven that this belief, if not totally wrong, is a gross simplification of what has happened in China. This does not mean that the state has not played a role in China’s economic growth; in fact, it has played an important role. What scholars need to study, however, is what this role is and why it has promoted economic growth.

The most prevailing view is that the Chinese state is a developmental state. For example, Lee (2008) summarizes three common features of the governments in China, Japan, and Korea: investing in capacities including human capital and technological progress; gradualism; and government intervention. Like the classical arguments for the developmental state, this summary believes that the three governments take conscious actions to pursue economic growth. Lin (2009) brings development strategy into the analysis. In his formulation, China’s economic success in the reform era is a result of the government’s conscious change of its development strategy. Before 1978, the Chinese government adopted the HIDS, which was not in line with China’s comparative advantage in the labor-intensive industry; after 1978, the comparative advantage strategy has been adopted by which China has embarked on a path of growth featuring industrial upgrading that has followed China’s improved factor endowments. In theory, the comparative advantage strategy is essentially equivalent to allowing the market to choose. Lin argues, however, that in reality there are many market failures so the government’s conscious choices are required.

What the developmental state school has not fully explained is why and how the government is able to adopt growth-enhancing policies. In particular, it does not explain
why some authoritarian governments are able to adopt these policies while others are not. In recent years, there is a small but growing literature trying to answer this question. Two papers in this field have direct bearings for China; both of them emphasize the institutionalization of the ruling party as a driving force for better economic performance in autocracies.

Besley and Kudamatsu (2008) build a principal–agent model to show that the selectorate is more likely to get rid of bad leaders if it has securer power in a divided society. They provide five case studies (including one on China) to illustrate their theoretical prediction. Institutionalization is embedded in the conditions they have identified for better economic performance. In the first place, institutionalization helps the selectorate—the ruling party—to secure its power. More importantly, the selectorate has to have a set of pre-agreed rules—a form of institutionalization—to get rid of bad leaders. If the leader is an absolute despot, there is almost no way to get rid of him except by resorting to violence. Gehlbach and Keefer (2008) provide more direct evidence for the role of party institutionalization. They find in a cross-country regression that autocracies performed better in terms of economic growth when their ruling parties had longer history. They interpret this finding as evidence for the positive role of party institutionalization. Specifically, their theoretical model takes within-party information sharing as the most distinctive feature of party institutionalization. Party members are informed of the behavior of the leader and can punish the latter by refusal. As a result, the leader becomes less predatory on party members who then become more likely to invest. Gehlbach and Keefer (2008) also use China as a case to illustrate their theory.

While their specific mechanisms can be debated, these two studies have rightly pointed out that institutionalization is one of the mechanisms that separate successful autocracies from failed ones, a theme that often emerges from the writings of political scientists studying comparative politics. In the case of China, institutionalization of the CCP has definitely been one of the key drivers for the Chinese government’s growth-enhancing policies. In the Mao era, government decisions were haphazard, pretty much depending on Mao’s personal preferences which changed frequently. When reform was started, one of the important changes that Deng Xiaoping brought to the party was institutionalization. Government decision making was streamlined and the decision rights were delineated. The standing committee of the political bureau of the central committee was established as the main decision-making body. Personal cult was eliminated and collective leadership has taken root. A mandatory retirement scheme was introduced and an implicit term limit was imposed on the top leaders. A succession rule was established to allow the next-generation leaders be selected by the current leaders and the retired leaders together. In addition, a trinity of power has taken shape to assign the three top jobs, the party secretary, the president, and the chairman of the military committee, to one person, so power is consolidated and the strife experienced in the Mao era can be
avoided.\textsuperscript{34} Ideologically, the CCP has waved farewell to its revolutionary past and has transformed itself into an all-people’s party.\textsuperscript{35}

The CCP has become more elitist in the process of transformation. This has been driven by both supply-side and demand-side factors. On the supply side, the CCP has intentionally targeted young people from elite universities (Li and Walder, 2001; Han, 2007; Bishop and Liu, 2008) and put more organizational efforts into sectors with potential high rents (Hu and Yao, 2012). On the demand side, people still want to join the party because the membership carries significant premiums in earnings and career advancement, especially in the sectors of high rents (Hu and Yao, 2012).\textsuperscript{36} As a result, the CCP has defied the prediction of the market transition theory (Nee, 1989) and has doubled its membership to 68 million over the last 30 years.

In essence, the institutionalization thesis reiterates the role that checks and balances have played in more constitutionalized systems. However, democracies by design have checks and balances as their inherent institutional elements, yet their economic performances are as diverse as among autocracies. To answer the question why some autocracies have done better than others, one needs to go one step further to study the social and economic conditions that have shaped the autocracies in different places.

In this regard, political scientist Meredith Woo-Cumings’ account of the Taiwanese and South Korean experiences provides illuminating ideas. She notes that the governments in Taiwan and South Korea could be relatively free to adopt economic policies that enhanced the two economies’ long-term growth prospects in their early stage of economic

\textsuperscript{34} Mao served as the chairman of the CCP. Before the Cultural Revolution, Liu Shaoqi served as the president of the country and Deng Xiaoping served as the party secretary who led the daily operation of the party. In the 10 years of Cultural Revolution, these two positions were suspended. The indeterminacy was one of the sources that caused distrust between Mao and his heir-apparent Lin Biao. In open occasions Lin strongly proposed that Mao assumed the presidency although his true wish was that Mao would allow him to take the position so his succession could be secured. Mao sensed that, and firmly rejected Lin’s proposal. This also alerted Mao that Lin could be a rival and began to prosecute Lin’s close aid, Chen Boda. Mao’s move in turn alerted Lin who, together with his son, began a plot to overthrow Mao. His plan fell through; he died with his wife and son in an airplane crash in Mongolia fleeing to the Soviet Union.

\textsuperscript{35} This was highlighted by the Three Representations announced in its 16th party congress held in 2002. Instead of representing the working class, the CCP now claims to represent the most advanced cultures, the most advanced productive forces, and the interests of the vast majority of the Chinese people.

\textsuperscript{36} Li et al. (2007), however, reject the existence of the income premium. Party members may earn higher income only because they have higher abilities than non-party members. Li et al. (2007) use a unique data set of twins to deal with this identification issue and find that there is no party premium within the pair of twins. On the other hand, Hu and Yao (2012) use the China Household Income Panel Survey (CHIPs) data and find that party membership carries higher premiums in earnings and promotes career advancement in high-rent sectors than in low-rent sectors. Because they make the comparison among party members in different sectors, they can perform a quasi-difference-in-difference study to deal with the issue of self-selection in party membership. They also conduct a panel analysis for people who have data both before and after they joined the party.
development because the two societies were made relatively equal by the Japanese colonists between 1895 and 1945 (Woo-Cumings, 1997). On the one hand, Taiwan and Korea were designated as suppliers of agricultural goods in imperial Japan’s version of the Great East Asian Commonwealth so urban industrialists were suppressed in those two places. On the other hand, the Japanese colonists intentionally restricted the growth of the landed class in both places because they feared that this class would become a breeding ground for nationalist sentiments and organized upheavals against their colonial rule. “This discontinuity had a powerful leveling effect, equalizing incomes more than in most developing countries and providing a fertile ground for instituting effective interventionist states, which were given a relatively free hand to forge a developmental coalition as they saw fit.” (Woo-Cumings, 1997; p. 331).

He and Yao (2011) take Woo-Cumings’ idea to study China. They build a repeated Stackelberg game featuring three actors, the government and two opposing groups of citizens, to study how social equality has induced the Chinese government to adopt growth-enhancing policies. In the model, the two groups of citizens compete with each other to produce the government, and once the government is produced, the other group can wage a revolution to overthrow it if its policy is not desirable for the group. He and Yao show that in the perfect Markov stationary equilibrium, equal political power of the two groups induces the government to treat them equally in social distribution, which in turn guarantees maximum social output. They call the government at this point a disinterested government, i.e. a government that turns blind to political identities, but instead maximizes the social output.

As Section 7.2 has shown, China was made an equal society when its economy took off at the end of the 1970s. This favorable condition has enabled the CCP to ignore the issue of redistribution for quite a long time. In the meantime, there has been no social group that has become strong enough to challenge the CCP’s ruling position, so it does not need to waste resources to defend its rule. Then to maximize its own gains, it is rational for the CCP to adopt growth-enhancing policies because economic growth brings both legitimacy to its rule and tangible material benefits to its core members. However, there is no free lunch in the world. The CCP’s growth-centered approach has contributed to enlarging income inequality in the country, which would potentially undermine its disinterestedness toward the society. Section 7.7 will discuss this issue in more detail.

In summary, the Chinese government has adopted growth-enhancing policies both because China had favorable initial social and political conditions and because its political system has introduced institutions that align officials’ personal interests with the societal interests. It is worth noting that those institutions have not followed any blueprints; instead, they are contingent arrangements aimed at solving the most urgent issues in front of the decision makers. At the philosophical level, this is a result of the Chinese leaders’ belief in pragmatism: there is no ultimate truth; what is going on today is a reasonable result as
long as it improves the world (Bromley, 2009). There are downsides to this belief, but it has helped China go through the turbulent phase of economic reform.

7.5. EXPLAINING CHINA’S EXPORT-LED GROWTH MODEL

Section 7.2.4 introduced China’s export-led growth (ELG) model and its great achievements in the 2000s. This section sets out to explain the driving forces behind China’s ELG. The explanation revolves around the double transition of demography and labor reallocation and the reconfiguration of the East Asian manufacturing. Along the way, we will also show that China’s export has not led to the fallacy of composition. Following that, we will show that Chinese export has been upgraded throughout the years avoiding the so-called trade trap.

7.5.1 The Double Transition and China’s ELG Model

Demographic transition has been shown to be a significant contributor to East Asian economic growth (e.g. Bloom and Finlay, 2009). Since 1979, China has adopted a strict family planning policy. In the city, a family is only allowed to have one child; in the countryside, a so-called 1.5 children policy—meaning a family can only have one child if the first is a boy, but can have a second child if the first is a girl—is embraced. Because of this policy, China has experienced a dramatic demographic transition. Figure 7.20 compares China’s age-dependency ratios—defined as the ratio between the dependent population (people aged under 15 and people over the age of 65) and the working population (people between the ages of 15 and 65)—and those of the United States and India for the period 1960–2010. In the 1960s and 1970s, China was broadly similar to India with its

age-dependency ratio close to 80%. Since then, China’s age-dependency ratio has been dropping by a much faster rate than India’s. In 1990, it dropped below the American level of 50%, and by 2010, it reached 38%. In the same year, India’s age-dependency ratio was 55%. On the other hand, the age-dependency ratio in the United States has been stabilized at around 50% since 1980.

Fast decline of the age-dependency ratio has two effects on the Chinese economy. One is to increase labor supply. Between 1990 and 2010, China’s labor force increased by roughly 10 million each year on average; the decline of the age-dependency ratio contributed 4 million. The other effect is to increase the national saving rate. The life-cycle effect tends to increase the household saving rate. In addition, corporate profits increase because of increased labor supply, but Chinese companies do not pay dividends often so their savings increase. Lastly, the government saves a large portion of its revenue in addition to saving on social security. All three factors contribute to increasing the national saving rate.

Concurrent with the drastic demographic transition, fast industrialization has brought labor out of agriculture and reallocated them to industry and services. Figure 7.21 shows the accumulation of migrant workers between 1993 and 2009. Except in 1997 when the Asian Financial Crisis happened, the number of migrant workers increased every year. Between 1997 and 2009, 8.7 million migrant workers left the countryside each year. The countryside has a large reserve of labor; for a long time, much of this reserve fitted

![Figure 7.21 Migrant Workers: 1993–2009. Source: China Yearbook of Labor Statistics, various years. Beijing: China Statistical Press.](image-url)
into Lewis’ notion of surplus labor. As a result, the wage rate of migrant workers was suppressed, and the industry faced an almost flat curve of labor supply.

The double transition of demography and labor allocation is probably the most fundamental cause for China’s ELG and its success. It has both a level effect and a growth effect to increase China’s export. The level effect comes from a large labor supply, and the growth effect comes from two sources. One is increased savings which has allowed China to invest in its industrial capacity and upgrade its technology. The other is the differential rates of growth of labor productivity and the wage rate. Between 1990 and 2009, labor productivity in the manufacturing sector grew by an average rate of 13.6% (Figure 7.12), whereas the manufacturing wage only grew by an average rate of 7.4%. This means that China’s unit labor cost declined by 66% in that time period. Because labor is the major non-tradable input, this large decline inevitably increased the competitiveness of Chinese exports.

There are signs that China is reaching the turning point of its double transition, though. As a matter of fact, its age-dependency ratio began to rise in 2010. By 2020, China’s total labor force will probably begin to decline. On the other hand, wage rates have increased at quite a pace since 2009 (Knight et al. 2011). Many people began to speculate that China had passed the Lewis turning point—i.e. the point when labor supply turns from an infinite elasticity to a finite elasticity (e.g. Cai, 2010; Garnaut, 2010). However, wage increases alone cannot indicate whether an economy has passed the Lewis turning point; it could be a result of increased agricultural income. At the macro-level, agriculture still employs 30% of China’s total labor force, although its share in the national GDP is barely over 10%. Using individual data, Knight et al. (2011) estimate a probit model of migration and then compare the propensities of migration of migrant workers and farmers left behind. Extrapolating their results to the whole nation, they find that there were 70 million potential migrants in the countryside in 2007. With the pace between 1997 and 2009, it would take 8 years to fully absorb those migrants.

The above evidence shows that China’s double transition will come to an end between 2015 and 2020. Because of that, China’s export growth will slow down. In addition, China’s overall GDP growth will have to depend on the improvement of human capital.

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37 Lewis’s (1954) original formulation of the surplus labor relies on the notion of institutional wage in agriculture. That is, a surplus labor does not increase agricultural output, but is paid by the institutional wage. However, the institutional wage, even if it exists, would be likely to increase as income increases. As a result, labor supply to industry would not be unlimited. Sen (1966) reformulates the notion of surplus labor. His premise is the existence of a constant shadow price of labor in a reasonable range. Within this range, farm households can adjust their labor supply to maintain a constant output when a member is moved out. As a result, industrial labor supply is flat at the constant shadow price.

38 People left behind are much older than the current migrant workers. However, they can substitute for some of the younger workers already working in the city.
7.5.2 The Reconfiguration of Economic Geography in East Asia

China began to become the world’s factory after the Asian Financial Crisis; China’s accession to the World Trade Organization (WTO) has accelerated this process by imposing a universal reduction of trade barriers for Chinese exports. The fragmentation of production allowed China to take advantage of its double transition and a relatively robust industrial base to take up the labor-intensive slices of the global value chain. As a result, the economic geography of East Asia has gone through a major reconfiguration. Instead of exporting directly to North America and Europe, China’s neighbors provide China with raw materials, resources, and intermediate products; China then finishes the last phase of production and exports the final products to the world.

The four data series shown in Figure 7.22 provide a clue for the reconfiguration. The trade deficit of the US with the ASEAN+3—the ten ASEAN countries plus China, Japan, and Korea—has been increasing every year, except 2009. This increase has been closely matched by the growth of the US deficit with China, which approached $300 billion in 2008 and 2010. On the other hand, the US deficit with ASEAN+2—i.e. when China is excluded—has fluctuated and seldom passed $150 billion. All these can be contrasted with China’s enlarging deficit with the ASEAN countries, Japan and Korea as a whole—from $8.8 billion in 1998, to $142 billion in 2010. Apparently, China was taking up the trade surplus of ASEAN+2 with the US, but these countries’ losses were more than compensated for by their gains from China.

This conclusion has a strong implication for the fallacy of composition. In a recent paper, Blecker and Razmi (2010) show that China’s exports to the United States has a significant crowding-out effect on other developing countries’ exports to the United States and they take this as evidence for the existence of the fallacy of composition.
However, they have ignored the demand effect of China’s exports for other developing countries. Although China has not become a direct source for consumer goods, it has increased other East Asian countries’ exports of intermediate goods to the country (Park and Shin, 2009). In addition, evidence shows that China has played a positive role in increasing intra-ASEAN trade. Devadason (2011) documents inter-industrial trade among ASEAN-5 (Malaysia, Singapore, Thailand, Indonesia, and the Philippines) as well as between them and China. Adding export and import with China in a standard gravity model for intra-ASEAN-5 bilateral trade flows, she finds that a country’s exports to another ASEAN-5 country increases by 0.18% or 0.22%, respectively, when its exports to China or imports from China increase by 1%

In addition to bringing trade growth in East Asia, China has also made contributions to export growth in other parts of the world beyond the United States. As a matter of fact, Figure 7.23 shows that China has had a net trade deficit with the rest of the world other than the United States, in many years since 1998. The three schedules in the figure are obtained by subtracting China’s trade surplus with the United States reported by China; reported by the United States; and adjusted by Fung et al. (2006), respectively, from China’s total trade surplus. Using Fung et al. (2006)’s adjustment as the best guess

![Figure 7.23](image-url)  

**Figure 7.23** China’s trade surplus with the world excluding the US. Notes: The three schedules are obtained by subtracting China’s trade surplus with the United States reported by China; reported by the United States; and adjusted by Fung et al. (2006), respectively, from China’s total trade surplus. Fung et al. (2006) only provide data till 2005. They show that Hong Kong’s role as a rerouting destination of Chinese exports has declined over the years. For 2006-2010, the average rate of decline between 1998 and 2005 is used to extend Fung et al. (2006)’s adjustment. Source: United Nations, COMTRADE.

39 There are large discrepancies between China-reported China-US-trade balances and US-reported China-US trade balances, mainly because of the trade flowing through Hong Kong. China-reported data do not include the surpluses generated by goods that it exports to Hong Kong but then are re-exported by Hong Kong to the United States, but US-reported data do. Therefore, US-reported deficits with China are much larger than China-reported surplus with the United States. Fung et al. (2006) make several adjustments by taking Hong Kong’s re-export into consideration. The adjustment adopted in Figure 7.23
for China’s surplus with the United States, we can see that China had deficits with the rest of the world in all the years between 1998 and 2010, except in 2007 and 2008. The fallacy of composition may only exist in a static setting; in a dynamic setting, the growth of export in one country would have a demanding effect for other countries. The true problem facing China is its concentrated surplus with the United States; both countries need to take action to moderate the imbalances between them.

7.5.3 Technological Upgrading of Chinese Exports

Because about half of China’s export is low value-added processing trade, people are concerned whether China has fallen into a trade trap of low-end exports. Empirical evidence has shown, however, that China has made substantial progress in upgrading its exports. In the 1980s, the majority of Chinese exports were resources and agricultural goods; in the 1990s, garments became China’s top export; and today, electronic products by far are the largest category of China’s exports. Indeed, Rodrik (2006) shows that exports from China have been more sophisticated than exports from countries with similar income levels, and Schott (2008) finds that the structure of Chinese exports to the United States is similar to that of OECD countries’ exports to the same country.

The domestic technological contents of Chinese exports—i.e. technological contents contributed by Chinese domestic producers—have not been improved at a linear pace, though. Using Rodrik’s index of technological sophistication and the input–output table, Yao and Zhang (2008) calculate the domestic technological contents of the exports from China as a whole, Jiangsu province, and Guangdong province, respectively. In 1997, 91% of the technological contents of Chinese exports can be attributed to domestic production; the figure drops to 83% in 2002. The decline is more significant in Jiangsu province, from 92% to 78%. In addition, the decline is more pronounced in the more technologically sophisticated sectors. However, Guangdong province is found to have experienced a V curve between 1992 and 2002. Its domestic technological contents decline from close to 90% in 1992 to barely above 50% in 1997, but bounce back to 80% in 2002. Guangdong is a pioneer in China’s processing trade; this V-curve, thus, is a very encouraging sign.

Koopman et al. (2012) develop a new method to use the input–output table to calculate the domestic value-added of a country’s exports when processing trade is pervasive. They find that the total domestic value-added in China’s export is about 54% in both 1997 and 2002, but increases to 60.6% in 2007. There are large differences between normal exports and processing exports. For normal exports, domestic contents decline from 94.8% in 1997 to 84% in 2007; for processing exports, however, domestic contents increase from 21% in 1997 to 37.3% in 2007.

is based on US-reported data and takes into account mark-up and service fees charged by Hong Kong companies.

40 The NBS revises the input–output table for the country and each province in every 5 years. Since 1997, the input–output table has contained 124 sectors. Before that, a simplified input–output table of 32 sectors was used.
The above evidence suggests that China’s processing export has not trapped the country in low value-added and low-tech trade. The findings on Guangdong province and processing trade are particularly encouraging. It seems that there has been a learning-by-doing process going on in China’s processing trade; Coopman et al.’s finding suggests that this process is even stronger in processing trade than in normal trade. In fact, processing companies are not all just characterized by the abundance of labor. For example, Faxconn, the largest processing company in the world, has become a technological leader in China. It was ranked the third in mainland China in terms of granted patents between 2005 and 2010; it was also ranked 13th in granted patents in the United States in 2010.41

One remaining issue is that there has been no study that separates domestic firms from foreign firms operating in China. China has been the second largest recipient of foreign direct investment (FDI) in the world. FDI accounts for about 6% of China’s overall capital formation, half of China’s export and almost all of China’s trade surplus (Rosen, 2011). The improvements in processing exports may have all been done by foreign-invested companies including Faxconn, a Taiwanese company.

7.6. DOMESTIC AND GLOBAL IMBALANCES

China’s ELG has brought growth and prosperity to the country; in the meantime, serious structural problems have emerged in the economy. In the literature, they are usually summarized under the title of structural imbalances. In the meantime, China’s ELG has generated large amounts of trade surplus since 2004, and China’s official foreign reserves had increased to an astonishing level of $3.2 trillion by the end of 2011. Not surprisingly, therefore, China has been in the center stage of the global imbalances. For the purpose of the review in this section, China’s domestic and global imbalance problems can be summarized into the following three puzzles:

• Puzzle 1: The share of household income in national income has declined since 1996 although per-capita income has increased.
• Puzzle 2: The national saving rate has increased dramatically since 2000. The household saving rate has increased despite the declining share of household income in national income; the size of corporate savings has become as large as the size of household savings although the corporate saving rate has remained constant; and the government saving rate has remained higher than the household saving rate in most years.
• Puzzle 3: China has become a net international capital provider although returns to capital in the country are higher than in most other countries.

Below in Section 7.6.1 we will first provide evidence for these three puzzles, and then in the next several sections will review the explanations that have been put forward for them in the literature. It is noteworthy that all the three puzzles bear direct implications

for China’s external imbalances; a thorough understanding of them can help us understand global imbalances as well.

### 7.6.1 Evidence of the Puzzles

Evidence of Puzzle 1 is shown in Figure 7.24, which presents the initial distribution of the gross national income (GNI). The share of household income increased in the first few years of the 1990s and reached 67% in 1996. It began to decline in that same year, though, and dropped to 50% in 2007. In the meantime, corporate and government income both increased to a quarter of the GNI.

Part of Puzzle 2 is shown in Figure 7.25, which presents China’s GDP expenditures. Consumption as a share of GDP has declined since the early 1980s. While the early decline was probably a result of increased income, the decline since 2000 has been very abrupt and warrants close scrutiny. The other side of the story implied by this fast decline of the consumption share is that the national saving rate has increased dramatically from around 40% in the late 1990s to the astonishing level of 52% in 2010.

Figure 7.26 presents the composition of China’s national savings in the period 1992–2008 for which the NBS’s *Flow of Funds Table* provides data. It provides evidence for the rest of Puzzle 2. The share of household savings in GDP experienced a shallow U-curve over the years. It was the highest in the early 1990s, reaching over 22% and then declined reaching its lowest of 16.2% in 2001. This was mainly caused by the

![Figure 7.24 Shares of household, corporate, and government income in GNI. Source: Bai and Qian (2009). (The data come from the NBS’ Flow of Funds Table, whose latest release is for the year 2008. Bai and Qian (2009) provide adjustments to the official data and obtain more consistent figures.)](image)

42 There was a redefinition of corporate savings in 2006. Before that year, all corporate income was counted as savings. Since that year, a substantial portion of corporate savings (50%, 60%, and 40% in 2006, 2007 and 2008, respectively) has been classified as consumption, which caused a significant drop of the national saving rate between 2005 and 2006.
privatization of SOEs that caused massive unemployment.\textsuperscript{43} Since then, it has regained some ground and by 2010 climbed to 18.5%. It is noteworthy that as households’ share in GDP has declined since the mid-1990s, so has households’ share of disposable income. Households’ contribution to the national savings has regained ground only because the household saving rate increased quite substantially, as shown in Figure 7.27. In 1992, a typical Chinese household saved one third of its disposable income. This was reduced to a quarter in 2000 and 2001, but then has entered a steady upward path until it reached 39.4% in 2008.

It is important to realize that corporate and government savings grew fast since the early 1990s (Kuijs, 2006). Between 1992 and 2005, before a redefinition of corporate savings was adopted, the share of corporate savings in GDP increased from 11.6% to 20.0%. Even after the redefinition that categorized a large portion of corporate income as consumption, that share still reached 17.8% in 2008. That is, corporate savings were almost as large as household savings. In the early 1990s, China had balanced international trade although household savings at that time were the largest contributor to the national savings. Therefore, the rise of corporate savings is as important as, if not more important, than the rise of household savings in causing China’s large current account surpluses in the 2000s.

The contribution of government savings has been more or less stable. On average, government savings accounted for 6.5% of the GDP. However, this was obtained when the government was increasing transfers to the household sector.\textsuperscript{44} Therefore, the government must have saved more and more out of its disposable income, which is indeed what

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure725.png}
\end{figure}

\textsuperscript{43} Between 1995 and 2005, close to 50 million SOE workers lost their jobs. In 1998 alone, 20 million were dismissed from their SOE employers (Garnaut et al. 2005).
\textsuperscript{44} Between 1993 and 2000, household income on average was increased by merely 4.3% as a result of government transfer. This was increased to 10.4% between 2001 and 2007.
Figure 7.26 Components of China’s national savings. Source: NBS, The Flow of Funds Table, www.stats.gov.cn.

Figure 7.27 Household and government saving rates. Notes: Household saving rate is defined as household savings (including purchases of new homes) divided by household disposable income. Government saving rate is defined as government-conducted capital formation divided by government’s disposable income (i.e. government revenue net of transfers). Source: NBS, The Flow of Funds Table, www.stats.gov.cn.

Figure 7.27 has shown. As a matter of fact, the government saving rate has been higher than the household saving rate in most years. Most of the government savings have gone into infrastructural building. This should be envied by countries stranded by large foreign debts owned by the government; yet at the scale of China’s, government savings could become a mixed blessing because government investment, especially investment in industrial parks, is likely to tilt the playing field of the economy.

The sudden drop of the government saving rate in 2005 and 2006 is suspicious. It could be the result of changed definitions during the period 2004–2006.
Finally, Puzzle 3 is again shown by Figure 7.25. The share of capital formation (or the rate of investment, broadly defined) in GDP was largely in line with the national saving rate before 2002, so China’s net export was minimum. The rate of investment increased together with the growth of the saving rate since then, but with a slower pace. The result was that China began to experience large current account surpluses since 2003. In 2007 and 2008, China’s net export reached 8.9% and 7.9% of GDP, respectively. This is one of the areas that has raised serious concerns in the international community about China’s ELG. In the literature, most studies link China’s high current account surplus to its high saving rates. However, it is not guaranteed that high saving rates always lead to high current account surpluses. For example, China’s national saving rate continued to increase in 2009 and 2010, but its current account surplus declined substantially to 4.3% and 4.0% of GDP, respectively.

The current account surplus is puzzling because the return to capital is high in China. Using GDP accounting data, Bai et al. (2006) find that the aggregate rate of return to capital fell from roughly 25% between 1979 and 1992 to about 20% between 1993 and 1998 and has remained in the vicinity of 20% since 1998. This is confirmed by studies using disaggregated data. For example, Feng Lu and his colleagues use industry-level data and find that the rate of return to capital fell in the range of 10–20% in the 2000s (CCER, 2007). Another indicator of the high return to capital is the discrepancy between the official interest rates and the interest rates charged in the informal financial market. While the official base lending rate has been 6–7% in recent years, the rates prevailing in the informal market of Wenzhou, a city famous for its private business development, have been more than 20% (Rosen, 2011). On the other hand, China’s official foreign reserves have increased dramatically since 2004 and reached $3.18 trillion by the end of 2011. More than one third of it has been used to buy US treasury bonds, which only promise a rate of return of 2–3%. So the question is: why does capital not stay in China to reap the high returns instead of becoming the official foreign reserves and flowing to other countries to buy low-return assets such as United States treasury bonds?

In the next several subsections, we will present the explanations for the three puzzles. Section 7.6.2 presents three explanations that treat the three puzzles as by-products of China’s double transition and its higher growth rates relative to other countries. Section 7.6.3 sets out to explain rising household saving rates. Sections 7.6.4 and 7.6.5 then discuss the roles of the financial sector and the government in magnifying China’s imbalance problems. Lastly, Section 7.6.6 deals with the issues of the exchange rate.

**7.6.2 Structural Change, Economic Growth, and the Puzzles**

It is clear that Puzzle 1 is inconsistent with one of the Kaldor Facts (Kaldor, 1957), namely, the shares of national income received by labor and capital are roughly constant over long periods of time. To resolve this inconsistency, one may have to consider China’s drastic
structural change that has taken place since the 1980s. Specifically, two mechanisms are worth exploring.

One of them is related to the different shares of labor income in agriculture, manufacturing, and services. The manufacturing sector is more capital intensive than agriculture and services in developing countries. Before manufacturing reaches the highest point of its hump-shaped trajectory of employment, it draws labor out of agriculture so the share of labor income in the national income declines. After manufacturing climbs over the highest point of its hump-shaped trajectory, services begin to pick up and the share of labor increases. That is, the labor share in national income should exhibit a U-curve as a country develops. Li et al. (2009)’s cross-country panel study has confirmed this U-curve. It can also be generalized to the consumption share. For example, both Japan and Korea have experienced a U-curve in their consumption shares (Cai, 2011). Because Chinese manufacturing is still on the left side of the hump, we can then understand Puzzle 1 and the first part of Puzzle 2, namely, the national saving rate increases. In addition, adding two more facts about China can explain another part of Puzzle 2, i.e. the rising shares of corporate and government savings. One is that Chinese companies do not distribute profits often, and the other is that companies reinvest most of their retained earnings and the government invests a large part of its revenue.

However, the above explanation may not be able to account for everything that is happening to China. Japan’s consumption share declined before 1971 and has increased since that year. In Korea, the trough happened in 1989. However, the consumption shares at the trough in both countries were higher than China’s today. In Japan, it was 52%; in Korea it was 60%. In contrast, China’s consumption share was 48% in 2010 and seemed to continue to decline. Therefore, it seems that the different shares of labor income in the three sectors alone cannot fully explain China’s deeper trough.

The other mechanism is through suppressed wage rates. When surplus labor exists in agriculture, the industrial wage rate is constant. In reality, manufacturing wage rate grew by an average of 8% per annum in the period 1992–2008 (Conference Board, 2010). This is high by international standards. However, it is lower than the growth rate of labor productivity in the same sector, which was 16.8% per annum (Figure 7.12) between 1991 and 2009. This large discrepancy between wage and productivity growth can explain Puzzle 1 and part of Puzzle 2. To see that, let us consider a simple case in which $A$ stands for the labor productivity (measured as per-worker value-added) in the whole economy, $w$ stands for the wage rate, and $L$ stands for the total number of workers in the economy. Then GDP is simply $AL$, labor income as a share of GDP is $w/A$, and profit (returns to capital) as a share of GDP is $1 - w/A$. In most cases, $w$ should grow roughly at the same rate of $A$, so the shares of labor income and profit are constant over time. When the wage rate grows more slowly than labor productivity, then the share of labor income in GDP declines. In the Chinese case, more than 90% of household income comes from labor earnings. Therefore, household income as a share of GDP also
declines. This explains Puzzle 1. Because companies do not distribute their profits often, but instead reinvest most of them, and the government also invests a large portion of its revenue, the national saving rate increases. So does the share of savings contributed by companies and the government. This explains part of Puzzle 2.

The growth of labor productivity comes from two potential sources, TFP growth and capital deepening—that is, the growth of per-worker capital stock. As Section 7.3.2 showed, the growth of TFP has been moderate compared with the growth of labor productivity. Capital deepening is a more substantial contributor. Then, how does capital deepening happen?

Let $k$ stand for the capital intensity (per-worker capital stock), $s_c$ stand for the saving rate in the corporate + government sector, and $s_h$ stand for the saving rate in the household sector. To make it consistent with the Chinese reality, we assume $s_c > s_h$. In addition, we make the simple assumption that the household sector is only comprised of workers and household income is only comprised of labor income. Then the growth of $k$ can be conveniently expressed by the following:

$$
\dot{k} = A \left[ s_c \left(1 - \frac{w}{A}\right) + s_h \frac{w}{A} \right].
$$

That is, it is the sum of per-worker savings in the corporate + government sector and the per-worker savings in the household sector. It is obvious that $\dot{k}$ is positive. More importantly, its size increases as long as the share of household income $w/A$ declines. That is, capital intensity grows at an accelerated pace. Capital deepening happens in every economy as long as it grows. What distinguishes China from other countries, therefore, is that capital deepening happens at an accelerated rate in China.

The key here is that the wage rate grows more slowly than labor productivity. Even without surplus labor in agriculture, this can still happen. In a two-sector model with agriculture and industry, it is easy to envision that the industrial wage rate is determined by the marginal product of labor in agriculture. In such a simple framework, the gap between industrial labor productivity and its wage rate is determined by three factors: (i) the gap between the TFP growth rates in the two sectors; (ii) the gap between the rates of capital formation in the two sectors; and (iii) labor migration from agriculture to industry. The growth of TFP is not low in agriculture, mostly due to fast biotech innovations. But capital investment in agriculture has been minimal and will perhaps remain low in the future. Therefore, we have to wait for labor migration to reach a certain point to see the wage rate grow faster than labor productivity.

Structural change, however, cannot explain the rise of the household saving rate and large current account surpluses. Before we present more detailed explanations for those two phenomena, we first discuss the role of differential rates of growth to create global imbalances. In this regard, the prevailing view is set by Engel and Rogers (2006) that higher expected growth rates imply a larger future share of the country in the
world output, so consumers in this country should borrow from other countries today. Obviously, China’s high current account surpluses are inconsistent with this view because the share of the Chinese economy in the world is increasing due to its faster growth rate. Historical evidence also shows that most countries had current account surpluses in their high-growth periods (Xu and Yang, 2012). One of the reasons may be that Engel and Rogers do not consider how the current growth rate affects savings and investment.

In the spirit of the life-cycle hypothesis (LCH), Liu and Yao (2012) consider both the national saving rate and the investment rate for the relationship between the current growth rate and the current account. In their overlapping generation model with a single economy, agents live for two periods; they save when they are young and consume the savings when they are old. Consumption is comprised of a self-produced part and a purchased part with the share of the first part declining. The production side features decreasing returns to scale and labor-augmenting technological progress. In such an economy, the capital-output ratio is no longer a constant but declines when output grows faster. Then the national saving rate is a convex function of the growth rate while the investment rate is almost linear in it. So the current account should exhibit a U-curve when an economy grows faster. Liu and Yao’s empirical study of 216 economies for the period 1960–2010, based on various specifications, confirms the existence of the U-curve. The trough happens when an economy grows by about 6% per annum.

Taking Liu and Yao (2012)’s results, we can understand both China’s surpluses and the United States’ deficits. China is on the right side of the U-curve so it is more likely to have surpluses when it grows faster; the United States is on the left side of the U-curve so it is more likely to have deficits when it grows faster. Furthermore, the United States has been growing faster than other advanced countries, so it is more likely to incur a deficit than those other countries. Therefore, Liu and Yao (2012) can accommodate the result of Engel and Rogers (2006).

7.6.3 Explaining Rising Household Saving Rates

China’s rising household saving rates have caught wide international attention in recent years. It is therefore worthwhile to set aside a separate subsection to review the literature on this important issue. A large volume of literature has emerged in recent years. This subsection will not be able to provide a full review for all the relevant papers; instead, we will concentrate on two strands of explanations related to income growth, demographic transition, and precautionary savings.

An early attempt to explain China’s high household saving rates is Modigliani and Cao (2004) in the framework of the life-cycle hypothesis. The LCH implies that income growth—not income level—and population structure are the two factors determining a country’s national saving rate. To be precise, the national saving rate is proportional to the GDP growth rate under a stable capital-output ratio, and a higher working-age ratio increases the proportion. Because of the setup of the LCH, the national saving rate
is equivalent to the household saving rate in Modigliani and Cao’s theoretical model. So they study the national saving rate in their empirical work. They find that income growth has been the dominant factor behind the dramatic increase in China’s saving rate in the period 1953–2000. Their point estimate shows that 1% point increase of the GDP growth rate leads to 2% point increase of the saving rate. Since the GDP growth rate was increased by 6–8% points in the reform period, accelerated GDP growth can account for 12–16% point increase of China’s national saving rate in this period. On the other hand, demographic structure has a lesser impact. One percentage point increase of the working-age ratio would only lead to 0.0015% point increase of the saving rate. The total effect of demographic transition therefore is small although the rising working-age ratio was increased by more than 50% points.

These results are confirmed by Horioka and Wan (2007) studying provincial panel data and Ang (2009) comparing China and India. However, the above studies have all relied on a reduce-form approach to study the effects of rising working-age ratios and could underestimate the impacts of demographic transition. For example, China’s economic growth was accelerated by about 2% points in the 2000s compared with the previous two decades, and its working-age ratio increased by 50% points between 2000 and 2010. Using Modigliani and Cao’s results, then, accelerated growth can explain a 4% point increase in the national saving rate, and the impact of higher working-age ratio can be ignored. However, the national saving rate was increased by 14% points (Figure 7.25) and the household saving rate was increased by 15% points (Figure 7.27) in the 2000s. Apparently, the LCH can only account for a small fraction of those increases.

Curtis et al. (2011) aim at remedying the potential shortcomings of the reduce-form approach. They build an explicit overlapping generation model in which agents live for 85 years, and study the change of China’s household saving rates in the period 1963–2009. What they have arrived at is a strong result: under the parameters used in their calibration, the change of China’s household saving rates in this period can be almost entirely explained by demographic transition. In particular, their model result predicts 25% for the household saving rate in 2009, only 2% points short of the actual rate. However, Curtis et al. (2011) do not calibrate their model by periods and thus may have underestimated the contribution of the change of the GDP growth rate in different periods.

One of Modigliani and Cao (2004)’s purposes is to show that the LCH performs much better than the Keynesian model of savings/consumption that ties the current savings/consumption to the current level of income. While the Keynesian model does not perform well at the aggregate level, as Modigliani and Cao have shown, it performs very well at the household level. This is evidently shown in Chamon and Prasad (2010) who study household saving behavior using the NBS urban household survey data for the

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46 Curtis et al. (2011) exclude purchases of new homes from household savings albeit the official statistics (such as those shown in Figure 7.27) include them.
period 1990–2005. In their summary regressions, per-capita income has very significant effects on the household saving rate. When per-capita income is doubled, the household saving rate will increase from 14.5 to 19.4% points depending on the regression specification. Wei and Zhang (2011), using provincial data for the period 1980–2007, find even large effects in the range of 20 (urban areas) to 45 (rural areas)% points. Because per-capita income in urban areas more than doubled in the period 2000–2010, income growth alone can more than explain the growth of the household saving rate in this period of time.

Extending the Keynesian model, one may also study the impact of worsening income distribution on China’s aggregate household saving rates. High-income households have higher average propensities to save than low-income households. Therefore, the aggregate household saving rate increases as income is being concentrated to higher-income households. Because income distribution has been deteriorating fast in the 2000s, there is a good reason to believe that a more skewed income distribution is one of the contributors to China’s growing overall household saving rates.

Many recent studies have resorted to the motivation of precautionary savings to explain China’s rising household saving rates. For example, Wen (2010) calibrates a theoretical model featuring borrowing constraints and future consumption uncertainties, and finds that China’s high household saving rate can be mostly explained by precautionary savings under borrowing constraints. Chamon and Prasad (2010) find that household saving rates increase in all age groups, particularly in the young and old groups. Despite their strong results on the level of income, they tend to attribute their findings to higher income uncertainties; and the lack of social security. In a related paper, Chamon et al. (2010) use the China Health and Nutrition Survey data to formally study those two factors. Adopting a precautionary saving model, their calibration shows that rising saving rates among younger households are consistent with rising income uncertainties; and higher saving rates among older households are consistent with a decline in the pension replacement ratio for those retiring after 1997. They conclude that rising income uncertainty and pension reforms can account for over half the increase in the urban household saving rate in China since the mid-1990s.

While the precautionary saving thesis has a lot to recommend, the causes behind the precautionary motives need to be scrutinized more closely. One of the frequently invoked causes is the lack of social security. However, historical data may suggest the opposite. In the 1990s, China’s social security system was greatly eroded because of SOE privatization; in the meantime, household saving rates declined. Since the end of 1999, both the coverage and the benefits of social security have been indisputably improved (Shen and Yao, 2009), yet the household saving rate has increased. That is, the empirical evidence since the early 1990s does not support the precautionary saving thesis.

There are studies directly estimating the effects of social security on savings/consumption using household data. However, the effects seem to be small. For example, Ma et al. (2010) find that the new medical insurance scheme has raised farm households’
food consumption by ¥81 each year, or about 2% of their total annual consumption expenditure. Bai and Wu (2011)'s study concurs with this finding; they find that the medical insurance has increased farm households’ total consumption by 5%. Yao and Zhou (2012) provide a comprehensive study on the impacts of social security on household consumption using the newly released urban and rural household data by the China Family Panel Studies (CFPS).47 Their main novelty is to estimate the effects by quantiles. Their premise is that income distribution is highly skewed in China and most people at the richer end have already got good social security coverage, so the aggregate effects of social security expansion could be small although it might have large effects on people at the poorer end. The results of their quantile regressions have confirmed their conjecture. While the impacts on poorer households are high—for example, expanding medical insurance from its current coverage to universal coverage can increase household consumption of the lowest 10% of the population by almost 30% in both the countryside and the city—the aggregate effect is small: household consumption would only increase by 0.3% points in the national GDP if all urban and rural families were covered by the current medical insurance, and would only increase by 2.6% points if urban families are also fully covered by pension and housing funds.48

A more plausible explanation along the line of precautionary savings is to look into the role of the rising housing prices. It is widely observed that housing prices have increased dramatically in the 2000s in most Chinese cities. It is also observed that Chinese home buyers often pay a higher down payment than required by law (Chamon and Prasad, 2010). As a result, they have to save quite a lot in order to buy a home. Chamon et al. (2010) attribute the high saving rates of young households to income uncertainty; but they can also be caused by those households’ desire to buy new homes. Chen et al. (2012) concur with this view. They use the 1998 housing reform as a natural experiment and find that the reform—it privatized public housing and stopped government-provided housing—has caused families not owning a home to increase their saving rates by 2.3% points. This effect is small compared with the large increase in the household saving rate. This is probably because Chen et al. (2012) only study the average effect of the commercialization of the housing market, but not the rising housing prices per se.

47 CFPS is modeled on the American Panel Studies of Income Dynamics (PSID). It is the first independent longitudinal survey in China. It covers more than 9000 households in rural and urban China, and the survey is conducted every 2 years. The first wave was conducted in 2010. The Institute of Social Science Survey at Peking University administers the survey.

48 Pension coverage is currently very low and housing funds (funds that people can borrow from to buy homes) virtually do not exist in the countryside, making the estimation highly unreliable. The growth of 2.6% points of the household consumption in national GDP is not trivial compared with China’s current account surplus of recent years, which was 3.5% of GDP in 2010. However, the cost to fulfill full social security coverage can be very high because the current coverage is very low. For example, the CFPS data show that 47.7% of the population did not have medical insurance and 85.7% of the qualified population did not have a pension in 2010.
In a recent paper, Wei and Zhang (2011) propose and test an interesting thesis for China’s high household saving rate from the angle of high sex ratios. China’s sex ratio at birth has increased over the years because of stringent family planning policy. Instead of 105–107 of the normal range, the sex ratio is 122 in China. Wei and Zhang reason that high sex ratios intensify the competition among men in the marriage market and force them to increase their values in the market. One way to do this is to increase savings intended for buying a home, car, and other status and wealth-related items. Wei and Zhang’s empirical analysis finds that both cross-regional and household-level evidence supports this hypothesis; high sex ratios can potentially account for 60% of the actual increase in the household saving rate during the period 1990–2007. But this effect seems too high. One factor Wei and Zhang are unable to control is the cultural heterogeneities in different parts of China that are simultaneously correlated with saving behavior and the preference for sons. High sex ratios have contributed to China’s high household saving rate, but their significance is not likely to be as large as Wei and Zhang have shown.

In summary, the growth of China’s household saving rates in the 2000s is likely to be linked with rising per-capita income, higher GDP growth rates, and precautionary saving motives, particularly those associated with rising housing prices. Worsening income distribution can also be a significant factor. High sex ratios play a role, but it is not likely to be a significant factor. More studies are needed for the link between rising housing prices and higher saving rates.

### 7.6.4 The Financial Sector and China’s External Imbalances

High national saving rates do not necessarily lead to high current account surpluses; it is not clear why China has to run large current account surpluses when the aggregate return to capital remains high. Liu and Yao (2012) can explain why a high-growing country like China is prone to run surpluses, but they cannot explain why China maintains higher returns to capital than other countries. To fully explain Puzzle 3, therefore, we need a more structured approach. In this case, the financial sector can be a focal point of such an approach because it is the intermediary between capital providers and capital users.

The recent literature has emphasized the role of finance in creating global imbalances (e.g. Caballero et al. 2008; Mendoza et al. 2009; and Ju and Wei, 2010). When the financial markets of countries differ in their capabilities to allocate capital, capital flows from countries with less efficient financial markets to countries with more efficient financial markets. That is, countries with more efficient financial markets are more likely to become debtors and countries with less efficient financial markets are more likely to become creditors in the global balance of payment. China’s financial sector is one of the least reformed sectors in the country; it is much underdeveloped compared with the financial sectors in advanced countries. Viewed against the above new literature, it is then hardly surprising to find that China runs large current account surpluses. To understand
how a weak financial sector has played out in China’s external imbalances, it is worthwhile to first take a brief review of its deficiencies.

China has a bank-based financial system with bank credits accounting for more than 70% of total finance. The capital market is underdeveloped. There are less than 3000 companies listed in the stock market; local capital markets at the subnational levels are very thin if they exist at all. In the stock market, there are virtually no corporate bonds. Within the banking sector, state-owned banks dominate, and the number of banking institutions is small, less than 3000 even if rural credit unions are included. This can be compared with more than 18,000 in the United States, a country whose nominal GDP is 2.5 times of China’s. In addition, interest rates are directly controlled by the government. The saving rate has been lower than the inflation rate since 2004 and the base lending rate is less than one third of the lending rate in Wenzhou’s informal financial market (Rosen, 2011).

Among the consequences of these deficiencies, the following have direct implications for China’s domestic and international imbalances. First, households’ financial income is suppressed. One of the functions of a well-functioning financial market, especially the capital market, is to allow ordinary people to share the fruits of future economic growth. China’s financial sector is not doing a good job in this respect; instead, it transfers wealth from ordinary depositors to banks and corporations through suppressed deposit rates and a low propensity to distribute dividends. That is, it contributes to Puzzle 1. Second, large companies, large SOEs in particular, are favored by the financial sector and the supply of capital and credits to them is abundant. In contrast, small and medium enterprises (SMEs) are consistently rationed by financial institutions. But SMEs provide 80% of urban jobs, so discrimination against them hurts the growth of employment, which then contributes to Puzzle 1 again. Third, also because of the rationing, SMEs have to raise funds on their own, most of the time relying on retained profit to augment their working capital and to take on new investment projects. As a result, corporate savings increase. Thus we have part of Puzzle 2. Fourth, the different treatments received by privileged and unprivileged firms have also the potential to create a mismatch between growth and the availability of financial resources. The growth potential of large firms is smaller than that of smaller firms, at least at the aggregate level. The abundance of capital to large firms will ultimately meet the constraint of diminishing marginal returns whereas credit rationing forces SMEs to operate at a stage where the return to capital remains still high. Diminishing returns in large firms and rationing on SMEs could even reach the point when part of the capital has to be invested outside the country, so Puzzle 3 follows.

Song et al. (2011) take up the last idea seriously and build and calibrate a general equilibrium model to show how a defective financial system can lead to a large trade surplus while the country sustains high output growth and high returns of capital. They distinguish between two kinds of firms, entrepreneurial firms and SOEs. The former are more efficient than the latter, but the latter are favored by the financial sector while the former are rationed. Growth comes from entrepreneurial firms who have to rely on
retained profit to invest to generate further growth. On the other hand, the share of the SOE sector shrinks, forcing the financial sector to invest abroad.

Song et al. (2011)’s categorization of the two types of firms is disputable. After the massive privatization carried out between 1995 and 2005, the SOEs left are generally as efficient as private firms. One of the reasons for their success is that many of them operate in monopolistic sectors or receive government support. On the other hand, banks do not favor all SOEs; they discriminate against small SOEs as well as private SMEs. In addition, they favor large, private firms as well as large SOEs. The dichotomy of the availability of credits Song et al. (2011) have imposed on the two types of firm has simplified their modeling, but does not fully reflect the reality.

Mao et al. (2012) extend the literature of finance and global imbalances and study how a country’s comparative advantage in finance and manufacturing affects its current account balance. Their theoretical model shows that a country with a comparative advantage in manufacturing would end up with current account surplus, and vice versa. Using a panel data of OECD countries and defining the finance–manufacturing comparative advantage of a pair of countries by the ratio between their relative labor productivity in the financial sector and manufacturing sector, their empirical study has found that countries with a comparative advantage in finance tend to have current account deficits. Tan et al. (2012) complement Mao et al. (2012) by studying how a country’s financial structure affects its current account balance. Their theoretical argument is that a bank-based financial system is more likely than a market-based financial system to generate surplus. The element that makes the difference is the finance of SMEs. Because SMEs have higher risks than large firms, and banks are inherently averse to risks, the financial need of SMEs is not likely to be met in a bank-based system and SMEs have to rely more on their retained profits for finance. In a market-based system, though, it is easier for SMEs to get finance through the capital market, and because of that, it is also easier for them to get bank finance—their finance through the capital market can boost banks’ confidence to lend to them. Tan et al. (2012) first study a large panel of countries and find that financial structure matters for a country’s current account balance. A closer study of the OECD countries has found that only corporate savings are affected by financial structure whereas household and government savings are not. Then studying cross-country firm survey data provided by the World Bank, Tan et al. (2012) find that SMEs tend to retain more profits for investment in countries with a more bank-based financial sector than in countries with a more market-based financial sector, whereas large firms are not different when the financial structure changes.

The results of these two studies are indicative for China although they do not study China per se. When the financial sector is added to the equation, it is relatively easier for us to explain the anomaly of the coexistence of high returns to capital and current account surpluses. A weak financial sector and a relatively strong manufacturing sector give China comparative advantage in manufacturing over finance. As a result, China
tends to concentrate on manufacturing and buys financial services from (i.e. export capital to) countries with advantages in finance. The returns to capital can be high in the manufacturing sector, but the deficiencies of the financial sector induce outflows of capital. On the other hand, the dominance of banks in the financial sector forces SMEs to rely on retained profits and creates a wedge of returns to capital between large firms and SMEs. Because international capital flows are determined by the return to capital among the privileged large firms, China ends up with exporting capital while the country’s aggregate returns to capital remain higher than the international level.

7.6.5 The Role of the Government

The Chinese government controls a large portion of the Chinese economy. Its budgetary income (mainly taxes) accounts for a quarter of the national GDP; adding other forms of income and social security, the income directly controlled by the government can be as high as one third of GDP. In addition, the state sector accounts for about 30% of the national GDP (Yao, 2011). Although many SOEs have become commercial entities, the government still maintains a strong influence on their investment and strategic plans, and above all, appoints their managers. On top of that, subnational governments at various levels borrow heavily from banks. In the last several years, infrastructural investment has accounted for more than one third of total bank lending, most of which has been undertaken by governments (Rosen, 2011). The 10 trillion yuan in debt accumulated by local governments are a result of this investment frenzy.

Because the government directly or indirectly controls more than 60% of the Chinese economy, it is not surprising that China’s internal and external imbalances are linked with the behavior of the government. In particular, the government has aggravated the imbalance problem in the following three areas.

First, government revenues are spent heavily in areas related to economic growth and transfers back to citizens are limited. Overall, government spending on economic affairs accounted for 20.1% of total government spending in 2008, much higher than other countries; in contrast, government spending on health care and social security was only 7.4% and 20%, respectively, much lower than other comparable countries (Bai et al. 2010). As a result, government savings are very high, contributing to one fifth of the national savings in recent years (Figure 7.27).

Second, government investment favors more capital-intensive producers in manufacturing. Government infrastructural investment is not confined to highways and railways; a large fraction of infrastructural investment conducted by local governments is directed to the numerous industrial parks that local governments build to attract investors. One of

49 According to a report released by the Institute of Finance and Trade Economics, Chinese Academy of Social Sciences on September 10, 2010 (IFTE, 2010), government budgetary income accounted for 25.4% of GDP in 2009, but government total income was increased to 32.3% if government funds income, extra-budgetary income, land sales revenues and social security income are added.
the hard constraints those industrial parks face is the limited supply of land. This has led to the paradoxical observation that, on the one hand, land in those parks is sold with a price much below the cost local governments have incurred in purchasing and preparing it; and on the other hand, local governments require investors to meet investment and tax quotas designated for units of land. The result is that firms entering the industrial parks are much more capital intensive than those outside. Because most local governments have concentrated local industrial development into industrial parks, firms that cannot enter the parks often find it very hard to get land. Many potential firms could be forced out of the market because of the lack of land. In addition, smaller firms outside the parks have to rent land, reducing their ability to collateralize their borrowings. The macroeconomic consequence is that the wedge between the privileged and unprivileged is widened and more imbalances are created.

More than that, a consequence of heavy government investment is the lowering of household consumption. Apparently, government investment has a direct crowding-out effect on household consumption. In addition to that, it lowers household consumption indirectly by distorting the economic structure. Chen and Yao (2011) take up this idea to study a panel of provincial data for the period 1978–2006. They find that when the share of infrastructural investment in a province’s government spending increases by 1% point, the share of household consumption in GDP declines by 0.31% points in that province. Their further exploration shows that this happens by two channels. One is that government infrastructural investment promotes the secondary sector, and the other is that it increases the returns to capital owners in that sector. Both reduce the share of labor income in GDP, which further leads to low shares of household consumption.50

Third, the government provides large subsidies to producers through suppressed factor prices. Capital is made cheap to privileged firms; resource prices are lower than in many countries; labor standards are laxly enforced; land is sold under the cost; and the environment is grossly underpriced. Adding up the subsidies implied by those distortions, the total subsidies can be as high as 10% of GDP (Huang and Tao, forthcoming; Huang and Wang, 2010).

In summary, the Chinese government is qualified as a production government (Yao, 2011), i.e. a government that puts paramount efforts and resources into the production process and in the meantime cares much less about the improvement of citizens’ welfare. The upside of such a government is that the national economy grows fast; its downside is that it facilitates an ongoing process of wealth transfer from ordinary citizens to producers and capital owners. This is yet another example of the paradoxical consequences of the Chinese government’s spearheaded efforts to achieve the paramount goal of growth. Economic growth is thought to be crucial for the CCP’s legitimacy, so the party has spent every effort to ensure fast economic growth in the country. However, to achieve

50 Chen and Yao (2011) do not find that government infrastructural investment has any effect on the household saving rate; nor do they find that it has any effect on the level of per-capita consumption.
this single-minded goal, the party has unconsciously adopted policies that would turn its head on its very initial objective to gain political support from the general public. The reason for this paradox is exactly what Dahl (1991) has pointed out for guardianship: the guardians—even if they have the will to work for the people—do not have the capacity to understand the whole consequence of what they are doing. In its newly released report, China 2030, the World Bank has called for the Chinese government to seriously take actions to further reform the country’s SOEs. But this is not enough. To push things onto the right track, serious reforms, including some form of political reform, have to be taken on the government itself.

7.6.6 The Exchange Rate and China’s External Imbalances

One of the contentious issues that China’s extraordinary growth of trade surplus has brought about is China’s exchange rate policy. Before 1994, when the official and market exchange rates were unified, the Chinese yuan had gone through a period of devaluation to correct its overvaluation in the period of command economy. Between 1994 and 2005, the yuan was effectively pegged to the dollar at 8.25 yuan to one dollar. Under the pressures from the United States and other countries, the yuan began to appreciate from June 2005 and by August 2008 its value had gained 23% against the dollar. The yuan stopped its pace of appreciation for about 2 years and then started again in June 2010. By the end of 2011, it had gained another 8.4% against the dollar. That is, the yuan appreciated against the dollar by 31.4% between June 2005 and the end of 2011. Adding the gap of inflation between China and the US, the real appreciation of the yuan against the dollar was about 36% in this time period. However, some scholars believe that this pace of appreciation is far from enough to restore a sustainable level of current accounts in China and the United States. This view has been repeatedly articulated by William Cline and John Williamson of the Peterson Institute of International Economics in a series of the institute’s policy briefs (Cline and Williamson, 2008, 2009, 2010, 2011). For example, they claimed in their 2011 policy brief that the yuan needed an upward revaluation of 28.5% against the dollar to bring China’s current account down to 3% in GDP, a level they impose on every country as sustainable in the long run.

There are many ways to estimate the so-called equilibrium exchange rate for a currency (Isard, 2007), among which the macroeconomic balance (MB) method and the purchasing power parity (PPP) method, adjusted for the Balassa–Samuelson and Penn effects, are the two most popular. The MB method had been used by the IMF until recently and is based on the following identity (Isard, 2007).

\[
\text{Current account} = \text{the equilibrium level of current account.}
\]


52 In 2012, the IMF introduced a new method called external balance assessment method. By this method, the IMF team directly estimates a determination function for the current account (or real effective exchange rate). See http://www.imf.org/external/np/res/eba/index.htm.
The left-hand side of the identity is represented by a country’s underlying current account (UCUR) position which is assumed to be a function of the exchange rate as well as other macroeconomic variables. The right-hand side of the identity is independent of the exchange rate and estimated by a country’s autonomous level of capital account, a sustainable position of its net foreign assets, or its equilibrium net domestic savings (i.e. national savings minus domestic investment). Both sides of the identity can be country-specific.

Cline and Williamson use a variant of the MB method. Instead of estimating the equilibrium level of current account, they impose a uniform level of 3% of GDP that they believe is sustainable in the long run. In addition, they do not estimate a country’s UCUR, but instead rely on the IMF medium-term projection to determine a country’s would-be level of current account if no exchange rate adjustment happens. However, it is hard to defend why 3% of GDP is a sustainable level of the current account for all the countries. Moreover, the IMF projections are often wrong. For example, it predicted that China’s current account would be 5.7% of GDP in 2011 (Cline and Williamson, 2011; Table 1), but China’s actual figure was only 4%. Finally, the elasticity of the current account with respect to the exchange rate is often an issue of debate.

In a survey article, Dunaway et al. (2006) have reviewed a set of studies that use the MB method to gauge the yuan’s equilibrium exchange rate. They find that those studies have reached very different estimates because they adopt different methods to estimate China’s equilibrium level of current accounts and their estimations of China’s UCUR arrive at very different exchange rate elasticities. Dunaway et al. (2006) also find that relatively small perturbations in the estimation method would lead the estimated undervaluation of the yuan to change by up to 23% points.

The PPP method adjusted for the Balassa-Samuelson and Penn effects focuses on longer-term equilibrium exchange rates. According to the theory of PPP, the relative values of two currencies in the long run should be equal to the inverse of the two countries’ price levels. The Balassa-Samuelson effect adds the impact of the relative price of tradable and non-tradable goods inside a country. However, empirical supports to the effect have been mixed (Isard, 2007). On the other hand, the Penn effect—i.e. higher-income countries tend to have higher real exchange rates—is strongly supported by cross-sectional data, and this regularity provides a convenient way to estimate a country’s equilibrium real exchange rate (Isard, 2007). However, the PPP method does not fare better than the MB method when it comes to estimating China’s equilibrium exchange rate; its results are very sensitive to the inclusion and exclusion of certain variables (Dunaway et al. 2006). One of the problems is that it imposes the same coefficients for all the countries although the Balassa-Samuelson and the Penn effects may differ by a country’s stage of economic development.

One of the main channels for the Balassa-Samuelson and the Penn effects to work is through rising domestic price levels. However, in a developing country with large amounts of underutilized resources, especially human resources, this channel may be
substantially weakened. The reason is that the growth of the export sector brings out the underutilized resources, which in turn suppress the growth of the domestic price level. Taking this idea forward, Wang and Yao (2009) estimate an equation of exchange rates based on the PPP method adjusted for the Penn effect using a panel data set of 186 countries and regions for the period 1960–2004. The novelty of their estimation is to interact a country’s relative per-capita GDP with its share of rural population. While the coefficient of the relative per-capita GDP remains significantly positive, meaning that the Penn effect holds, the coefficient of the interactive term is significantly negative for medium and low-income countries but is insignificant for high-income countries. That is, the Penn effect is significantly weaker when a country is still experiencing structural changes. Using the estimates obtained from their main regression, Wang and Yao (2009) calculate the elasticity of the Penn effect for China in the period 1994–2009 and find that it is 0.27, which is exactly the elasticity of China’s real exchange rate with respect to its relative income in that period. They also find that the yuan’s nominal value was undervalued by 6.5% against the dollar in June 2008, much lower than other findings.

The link between development stages and the strength of the Balassa–Samuelson and Penn effects has an implication for one to interpret the role of the fixed exchange rate regime (FERR) for China’s economic growth and external imbalances. In the medium and long run, the exchange rate regime would affect a country’s external balances only if the Balassa–Samuelson and Penn effects did not fully work because if they did, then the country’s competitiveness would be adjusted down and its external balances would be restored. Therefore, if China’s FERR has contributed to China’s economic growth and external imbalances, as many believe, it would be because structural change has weakened the two effects in the country. That is, the root cause is still economic fundamentals. That may be why international evidence provides mixed results for the relationship between a country’s exchange rate regime and its current account balances. For example, Chinn and Wie (2008) compile a large data set of over 170 countries for the period 1971–2005 and carefully study whether exchange rate regime flexibility affects a country’s current account reversion (i.e. from a surplus to a deficit or from a deficit to a surplus). Their conclusion is that there is no strong, robust, or monotonic relationship between exchange rate regime flexibility and the rate of current account reversion.

In summary, serious internal and external imbalances have developed in the Chinese economy since the end of the 1990s. Their causes are related to China’s demographic and economic fundamentals, a weak financial sector, and government distortions. There is a deficit of research on those causes. In particular, we do not have a good understanding of why the household saving rate has increased dramatically, how government behavior has exacerbated the imbalances, whether China’s external imbalances would persist, and what steps China should take to rebalance its economy. China’s imbalance problems will be unlikely to disappear very quickly; more research is needed if those problems are to be corrected.
7.7. INEQUALITY AND THE MIDDLE-INCOME TRAP

China used to be one of the countries with the most equal income distribution; in 1981 its Gini coefficient of per-capita income was only 0.29 (Cheng, 2007). Thirty years after, the coefficient has reached 0.48 by official data (Yin and Liu, 2011). Related to rising income inequality there is a worry that China would be falling into the middle-income trap, a situation in which a country stops its catch-up process when it reaches the level of middle income. International experiences, especially those of Latin American countries and some Southeast Asian countries, have shown that the middle-income trap often goes hand in hand with high-income inequality. The worry about China is thus warranted against the rising income inequality. This section will provide a selective review of China’s income inequality and its causes. In addition to reviewing the results using the official data, we will also report results based on the data provided by the first wave of the China Family Panel Studies (CFPS), an independent national survey managed by Peking University. Studies on the middle-income trap have been scant; this section will only point out several directions in which research can be carried out in order to enrich our understanding of the issue.

7.7.1 Facts of Income Inequality

The NBS began to carry out household surveys in the early 1980s, providing data for researchers to compile a time series of China’s income Gini coefficients. Figure 7.28 presents one set of such estimations for rural areas, urban areas, and the country as a whole, respectively, for the period 1981–2007. Except in the mid-1990s, income inequality increased in both the city and the countryside, as well as the whole country over the period of 26 years. The countryside has been more unequal than the city, mostly because the rural population is more diverse than the urban population in terms of occupation, stock of wealth, and human capital. By 2007, the Gini coefficient of the whole country reached 0.45. The number then was increased to 0.48 in 2009 (Yin and Liu, 2011).

The official data, however, do not reflect the income of the highest percentiles. Li and Luo (2011) have tried to remedy this deficiency. Their starting point is that the NBS data do not cover two groups of high-income people. One comprises those who in theory should be covered by the NBS survey but in reality are not because they often refuse to participate. The other is the group of extremely rich people who are not likely to be covered by any household survey at all. For people in the first group, Li and Luo use the executives of listed companies as a sample for them. The income of this sample of people can be found from the information made open by the listed companies. For people in the second group, Li and Luo first obtain the stocks of wealth of the 868 richest persons from the Forbes and Hurun 2007 lists of China’s richest persons.\(^\text{53}\) Assuming a rate of

\(^{53}\) The Hurun List of China’s Richest Persons has been compiled independently by Rupert Hoogewerf since 1999. Huren is his Chinese name.
return of 5%, they then estimate the annual income of those people in 2007. Finally, they estimate the country’s whole income distribution by assuming that the income of the above two groups of people and the people covered by the NBS survey follow a Pareto distribution. Using the NBS definition of income, they find that China’s overall Gini coefficient was 0.53 in 2007.54

The CFPS provides even higher Gini coefficients than Li and Luo (2011)’s adjusted figures.55 According to the household data provided by the CFPS, in 2010 the Gini coefficient was 0.556 for the whole country, 0.488 for the countryside, and 0.513 for the city (Shen and Lei, 2011).56 That is, by the CFPS data, China has entered the rank of the most unequal countries in the world.

The inequality is the most pronounced between urban and rural residents. Figure 7.29 shows the ratio of urban per-capita disposable income and rural per-capita net income for the period 1985–2011 using official data. In the early 1980s, the rural–urban income gap declined substantially because of the rural reform. By 1985, urban income was only barely above 1.8 times of rural income. Since then, the gap increased steadily until the mid-1990s when inflation drove up the prices of agricultural products more than those of other products. The gap began to rise again in 1997. It reached the peak of 3.3 times in the period 2007–2010. This is by far the highest in the world. The encouraging sign is

![Figure 7.28](image)


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54 Their estimation of the Gini coefficient without adjusting for the richest percentiles is 0.48, higher than that reported by Cheng (2007).


56 One potential problem with the CFPS is that it might have oversampled poor households because they might be more cooperative in the survey. This problem will be checked in the next round of survey scheduled for 2012.
that it declined in 2011. However, this decline was probably also due to the faster growth of agricultural prices than other prices. The CPI was 5.4%, but food prices rose by 11.8% in the year.\textsuperscript{57}

There is a problem of how to account for the income of migrant workers when the urban-rural income gap is considered. The official statistics treat migrant workers who stay in the city for more than 180 days in a year as urban residents (but excluding household heads). This may underestimate the income brought back home by migrant workers. According to the CFPS that had a looser definition of residency status in its 2010 survey, the urban–rural income gap is 2.5 times for 2010 (Shen and Lei, 2011). The urban per-capita income in CFPS is almost the same as the figure provided by the NBS, which are ¥18,428 and ¥18,858 in 2010, respectively. However, the rural per-capita income in CFPS is much higher than that provided by the NBS. The most significant difference rests in transfer income. In CFPS, it is ¥1315; in NBS, it is only ¥398. In total, rural per-capita income is ¥6421 according to the CFPS, but ¥5153 according to the NBS (Shen and Lei, 2011).

Notwithstanding increasing income disparities, the size of the middle class has increased steadily, especially in the city. Using four waves of data provided by the China Health and Nutrition Survey, Liu et al. (2009) compare the distributions of household per-capita income in 1991, 1997, 2000, and 2006. Three significant findings emerge from their comparison. First, income distributions in the city, the countryside, and the country as a whole have all moved toward the higher end in a fashion that is consistent with the first-order stochastic dominance. That is, household income has been uniformly improved. Second, consistent with rising income inequality, the distributions

\textsuperscript{57} The NBS Annual Statistical Report at \url{http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20120222_402786440.htm}. 
of income have become more dispersed. Third, the proportion of households falling into the medium-range of income has increased. In the city, the mode of the distribution has been gradually replaced by a continuum of income. That is, the size of the middle class has been increasing. It waits for a more careful study to show how much of increasing income inequality has been caused by a larger, but more diverse middle class.

7.7.2 Causes of Rising Income Inequality

When thinking about the causes of income inequality in China, one has to realize that China is a large and highly diverse country to begin with. People have sufficiently heterogeneous income capabilities that would have resulted in unequal income distribution. Market supporters would argue that people would improve their income capabilities in the long run in response to the market. However, this would happen only when the market works seamlessly, which is utopian in any country. Government actions are often needed to ensure more equal income distribution. In this regard, there are large deficits on the part of the Chinese government.

One of them is the restriction on population movement. It is noteworthy that the urban-rural income gap was already 2.78 times in 1978, largely due to the separation of the city and the countryside set by the _hukou_ system. Since 2003, restrictions on labor mobility have been abolished, but the _hukou_ system is still preventing migrants from permanently settling in the city. As a result, more people are forced to stay in the countryside and a wedge is created between urban and rural income.\(^{58}\)

Another deficit is the lack of social security in the countryside. While pension and health care coverage has reached 60% in the city, pensions have just started and health care is quite preliminary in the countryside. In addition, the city runs a reasonable subsistence maintenance program for low-income families whereas such programs barely exist in the countryside.

A third deficit is the lack of government actions to remove the barriers to more equal income distribution in the areas of production, redistribution, and regulation. Indeed, many of those barriers are set by the government itself. In the area of production, as our review in Section 7.6.5 has shown, the government provides substantial subsidies to producers and supports capital-intensive industries more than labor-intensive industries, causing the share of household income in the national GDP to decline. In the area of redistribution, there is no consistent government plan geared toward a more equal income distribution although the central government has increased its efforts to help

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\(^{58}\) The government announced a new _hukou_ policy on February 24, 2012. For people living in small cities and towns, they can choose to become local residents as long as they have a stable job and housing, including rented homes; and for people living in medium-sized cities, they can do so after they have worked and lived there for three consecutive years. Large cities, however, maintain the current _hukou_ policy.
rural residents and inland provinces. The government’s redistribution policy is seriously constrained by its desire to concentrate government revenues to invest in infrastructure, research, and projects that would generate faster current economic growth. In the area of regulation, government policies hinder the ability of ordinary citizens to take a share of economic growth in an equitable way. As we showed in Section 7.6.4, heavy regulation on the financial sector has resulted in regressive transfers of wealth from ordinary citizens to corporations and prevented ordinary citizens from benefiting from future economic growth. Government protection of the SOEs, especially those in the monopolistic sectors such as oil, telecom, and finance, has raised the income of those who have the privilege to work in those sectors. On the other hand, the government’s loose implementation of the labor standards has suppressed the income of migrant workers.

These deficits have allowed the population to become more diverse in income capabilities. The fundamental cause of these deficits is related to the production nature of the Chinese government at this stage. For most officials, the primary task of the government is to make the pie bigger, not to decide how to divide it. What they have not realized is that the way the pie is divided matters for its growth. The discussion of the middle-income trap may ring a bell, though.

7.7.3 The Middle-Income Trap

The notion of the middle-income trap was made popular by a World Bank report *An East Asian Renaissance: Ideas for Economic Growth* (Gill and Kharas, 2008) and the authors’ other writings (e.g. Kharas and Kohli, 2011). It refers to the situation in which a country fails to continue its catch-up process when its per-capita income has reached the middle-income level. According to Kharas and Kohli (2011), it happens when a middle-income country is not able to compete with either low-wage economies or highly skilled advanced economies. One of the examples of the trap is the Soviet Union and other former socialist countries in Eastern Europe. Their economies stopped to grow when their per-capita income reached a quarter of the American level. Latin American countries and some Southeastern countries are also believed to have experienced the trap. Table 7.7 is the income transition matrix of 112 countries between 1980 and 2009 using the World Bank categorization of income groups. Among the 112 countries, 71 were qualified as middle-income countries (lower-middle and higher-middle income countries together) in 1980. Only eight of them, all of which were higher-middle income countries in

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59 In addition to its regular rural poverty alleviation programs and urban subsistence maintenance programs, the central government has abolished the taxes levied on agriculture; made mandatory education free and provided subsidies to boarding students in the countryside; and increased unconditional transfers to inland provinces.

60 The World Bank defines income groups by absolute income in current dollars, but revises upward when time gets by. For example, in 1980, a country was qualified as a low-income country if its per-capita GDP was less than 370 dollars, whereas in 2009, the bar was raised to 995 dollars.
Table 7.7 The income transition matrix in the world: 1980–2009

<table>
<thead>
<tr>
<th></th>
<th>Low income</th>
<th>Lower-middle income</th>
<th>Higher-middle income</th>
<th>High income</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income</td>
<td>11</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Lower-middle income</td>
<td>12</td>
<td>22</td>
<td>12</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td>Higher-middle income</td>
<td>0</td>
<td>2</td>
<td>15</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>High income</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>28</td>
<td>27</td>
<td>34</td>
<td>112</td>
</tr>
</tbody>
</table>

Notes: The income groups follow the World Bank definition.
Source: PWT 6.0.

1980, moved to the high-income group by 2009. Among the 46 originally lower-middle income countries, 12 moved to the higher-middle income group, but another 12 dropped to low-income group. There were also two originally higher-middle income countries that moved down by one group. This means that the majority of the middle-income countries of 1980 did not manage to narrow their income gaps with the high-income countries. In this sense, they are trapped.

Kharas and Kohli (2011) point out two causes for a country to fall into the middle-income trap. First, low-income countries can maintain high growth rates by focusing on job creation, but this type of cheap growth is no longer possible for middle-income countries because underutilized human resources have already been depleted. A failure for a middle-income country to expand demand and to improve its total factor productivity would then lead the country to a middle-income trap. Second, international experiences show that the middle-income trap has often appeared together with high economic and social inequality. This is no more evident in the comparison between East Asia and Latin America. Except Hong Kong, East Asian economies have maintained fairly equal income distribution while they caught up with advanced economies. In contrast, Latin American countries have stagnated for thirty years while their income inequality remained high. Both causes are very pertinent to China.

As this review has shown, China’s economic growth has been mainly driven by abundant labor supply offered by its demographic transition and rural-urban migration and large quantities of capital investment offered by its high national saving rates although TFP improvement has been substantial. This model of growth may be reaching its limits for several reasons. First, the growth of labor has begun to decelerate and China’s total labor force may start to decline by 2020. In the meantime, structural change centered at labor movement from the countryside to the city will also reach its steady state soon. As a result, the period of cheap growth is approaching its end. Second, capital accumulation may not sustain future economic growth for two reasons. At the aggregate level, it will inevitably face the law of diminishing marginal returns if technological progress
does not keep up the pace. At the structural level, capital investment has weak effects to generate demand.\(^{61}\) Third, relying on investment for future growth has the tendency to reduce the share of households in the national income, as the evidence of Section 7.6.5 strongly attests. As a result, domestic demand cannot easily catch up with the pace of domestic supply, forcing China to continue relying on external demand. However, the extraordinary high growth of export in the period 2001–2008 was more likely to be the result of the one-shot effect of trade liberalization than an inherent part of China’s normal growth trajectory. China needs to enhance its domestic demand to generate future growth. Fourth, due to the distortions in finance, investment-driven growth can also worsen the income distribution in the household sector. On the one hand, investment is heavily controlled by the government and geared toward highly protected sectors such as infrastructure, telecom, and finance; on the other hand, for investment not controlled by the government, banks favor large and capital-intensive companies. Either way, people working in those privileged sectors end up enjoying higher income than people working in other sectors.\(^{62}\)

The adverse effects of inequality on economic growth have been well-established in the literature. The challenge to link inequality and the middle-income trap is to show why inequality is particularly bad for a country to escape the trap. More specifically, one has to explain why inequality does not hinder a country to reach the level of middle income but does prohibit it from attaining higher levels of income. In this regard, two explanations are pertinent in the case of China.

The first explanation is related to the size of the domestic market. Inequality limits the size of domestic market, but this may not be a serious constraint for economic growth when a country is poor because it can rely on export to grow. However, domestic markets would become more important when a country reaches the level of middle income because higher labor costs reduce its competitiveness in the world market. As a result, inequality can become detrimental to further growth in the country. China is a large country; its sheer size may render it problematic to rely on the world market for sustainable growth. In this regard, rising inequality can become a serious hindrance for the country to obtain higher income.

The second explanation is related to the stock and distribution of human capital. Empirical evidence shows that the return to education is not constant as educational

\(^{61}\) This might be one of the causes leading to the collapse of the Soviet Union. In the country, capital investment was concentrated in the heavy industry, especially in the military industry. But the demand of the heavy industry for more investment is limited. Without a growing consumer goods sector, capital investment would inevitably hit the wall.

\(^{62}\) Zhou et al. (2012) group Chinese industries into three sectors, labor-intensive, capital-intensive and resource-based, and study the wage inequality among them. Controlling the quality of labor, their decomposition finds that between-sector differentials have become more significant in explaining the wage inequality for the period 1993–2007.
attainment increases; it increases the fastest at the stage of high school and university education in China (Li et al. 2012). In general, it exhibits an S-curve as shown in Figure 7.30. Now think about the fact that the government has a fixed budget $B$ to be allocated to the education of two persons. Suppose that this budget is enough to raise one person’s education to $E$ if it is all allocated to him. It is reasonable to believe that $E$ increases in $B$. For the sake of simplicity, let us assume that $E$ is a linear function of $B$. Then there exists a value of $B$, say $B^*$, such that allocating $B$ to one person (so his educational attainment is $E^*$ as shown in the figure and the other person gets zero education) yields higher aggregate returns than equal allocation (so each person gets education of $0.5E^*$) when $B$ is less than $B^*$ and the reverse is true when $B$ is larger than $B^*$. It is possible to extend this argument to the whole population so that an unequal distribution of education helps economic growth when a country is relatively poor and the government does not have much resource to allocate, but a more equal distribution is more desirable when the country passes a certain level of income and the government has more resources to allocate. In reality, however, educational attainment is determined by both government support and individual decision. One important constraint for the latter is family income. In this regard, inequality can lead to slow growth of human capital because it discourages people at the lower end of the distribution from obtaining sufficient education. With more tax income after reaching the level of middle income, the government can help people from poorer families to obtain more education and boost economic growth.

The situation in China, however, is worrisome. Figure 7.31 presents the educational pyramids of urban and rural adults using data provided by the 2010 CFPS survey. It is clear from the figure that the gap between rural and urban areas persisted or became even
larger from older age groups to younger age groups, although young people obtained more education than older people in both areas.

Table 7.8 presents the gap by gender and age group. The gap of males of above 80 years old was 2.88 years of schooling. It then declined until the group of 50–59 years old (who were born in the 1950s), but then increased in the next two age groups. In particular, the gap jumped to 4.06 years for people between 30 and 39 years old. Those people were born in the 1970s and mostly started their education in the late 1970s and early 1980s, a period when the rural reform took place. It seems that the reform took a toll on rural education. Schools were mostly financed by the budget of local governments including the village government. The dismantling of collective farming might have reduced school quality because of deteriorating village budgets. Another possible reason was that farm families wanted their kids to work earlier on their newly acquired land. The gap was narrowed to 2.74 years for people between 21 and 29. But this gap was still between those of the age groups 60–69 and 70–79.

The situation for women was even worse. The urban–rural gap increased from the group of 80+ to the group of 30–39 except for the group of 40–49. This was because the educational attainment of urban women was increased much faster than rural women. As a matter of fact, in the youngest group, urban women had exactly the same amount of schooling as urban men. The urban–rural gap of the youngest group of women was still 3.35 years, higher than that of the group of 40–49 years of age, although it was smaller than that of group 30–39 years, which was the highest record of 4.19 years.

63 Younger age groups are not included in the pyramids because they might have not completed their schooling by 2010.
A close look at the youngest group of people shows that the average urban youth was one year short of finishing high school whereas the average rural youth was one year short of finishing middle school. Both are inadequate for China to grow into a high-income country; rural education is more so. By the official estimate (see Section 7.3.3), China’s raw college admission rate will be increased to 40% by 2020. However, if the education of the average person remains low, a bifurcation will be created among the next generation of people. In the 2020s, it is most likely that the major sources of employment will be medium-level manufacturing and services. This means that the bulk of the demand will be for workers who have medium-level technical trainings. The average rural youth will not be qualified for such jobs and the average urban youth will be barely qualified. To grow into a high-income country, China has to find ways to eliminate the gap created by the current trend of bifurcation.

In summary, the risks of China falling into the middle-income trap are likely to lie in China’s current investment-driven growth model and the bifurcation of educational attainment in the population. There are high demands for China to change its growth model from both inside and outside the country; the Chinese government has also realized the need for the country to move to a more consumption-driven economy. The problem is that it may not have found the way to make the change happen. On the other hand, it is more complicated to stop the bifurcation of education. Income and wealth inequality has definitely played a role leading to the bifurcation, but it takes a long time to correct such inequality. Government commitment has a more direct effect. The National Plan of Educational Reform and Development: 2010–2020 sets a high goal for the educational system to serve for an innovative society. As a result, formal education, university education in particular, is emphasized. More than that, elitist universities are given a priority among university education. Government programs (such as the 211 Project, the 985 Project, and the 2011 Programs) are geared toward providing large funds to a small number of elitist universities. While they have enhanced China’s innovative capacities, they have also worsened the bifurcation of education in the society. To make a change, the Chinese

### Table 7.8 The urban-rural educational gap by gender

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>21–29</td>
<td>2.74</td>
<td>3.35</td>
</tr>
<tr>
<td>30–39</td>
<td>4.06</td>
<td>4.19</td>
</tr>
<tr>
<td>40–49</td>
<td>2.27</td>
<td>3.19</td>
</tr>
<tr>
<td>50–59</td>
<td>2.17</td>
<td>3.38</td>
</tr>
<tr>
<td>60–69</td>
<td>2.24</td>
<td>2.97</td>
</tr>
<tr>
<td>70–79</td>
<td>2.87</td>
<td>2.09</td>
</tr>
<tr>
<td>80+</td>
<td>2.88</td>
<td>0.83</td>
</tr>
</tbody>
</table>

*Source: Calculated from Figure 7.30.*
government has to realize that its elitist approach to education is not consistent with the Chinese reality in the next 10–20 years.

### 7.8. CONCLUSIONS

This chapter has provided a comprehensive review of the causes and consequences of the Chinese growth miracle. Several conclusions can be drawn from the review. First, China’s economic success is largely a result of following the standard recommendations of neoclassical economics including high savings and investment; technological progress; human capital accumulation; and macroeconomic stability. In addition, China had favorable initial conditions, noticeably a relatively high level of human development, a sound industrial base, and an economically and socially equal society, when its economy took off at the end of the 1970s. From this point of view, the Chinese growth miracle is not miraculous at all. Second, what is interesting about China is how it has managed high economic growth while transforming itself from a command economy to a mixed economy. The key to understanding this is the contingent institutions China has created along the way of transition and growth. Instead of transplanting institutions as they appear in advanced countries, China has adapted them to suit the political and economic constraints at the time of transplantation. As a result, the resulting contingent institutions were not pure, but achieved the most urgent goals at the time. Third, China’s economic growth has been largely driven by investment and the manufacturing sector, and export has become one of the major growth drivers since China joined the WTO in 2001. In the meantime, serious internal and external imbalances have emerged. Those imbalances are likely to be the by-product of several fundamental forces moving the Chinese economy, particularly massive structural change including large rural-urban migration, abrupt demographic transition, and high growth itself. Several structural deficiencies have also played a role. Among them, underdevelopment of the financial sector and the government’s pro-producer policies are the two most important. Fourth, inequality has risen fast and may have negative consequences for China to grow into a high-income country. In particular, it is contributing to the bifurcation of education in the Chinese society. To overcome the bifurcation, the Chinese government has to make a commitment to raising the educational level of the average person in the countryside as well as in the city.

The Chinese experience provides ample opportunities for economists to study economic growth, especially the political economy of economic growth. In this regard, several areas are particularly worth further exploration. The first is the incentive structure provided for government officials in a successful authoritarian regime. The literature has a relatively good understanding of the incentive structure under a successful democracy, but the study of authoritarian regimes has barely started in economics. Authoritarian regimes are more diverse than democracies and thus need more careful studies to understand their economic performance. The Chinese authoritarian regime is relatively more
economically successful than other authoritarian regimes. In addition, China is a large country and the central government has to adopt delicate mechanisms to motivate local officials. It thus provides an interesting case for careful studies. The second area is the political economy of the Chinese growth model. While China’s investment and export-led growth model has its roots in economic and historic fundamentals, it is not deniable that it is also reinforced by government policy. How can this model continue when it does not provide proportional gains to the public? The third area is how inequality is transformed into uneven distribution of political power and becomes a hindrance to economic growth. China started out being one of the most equal societies and has become one of the most unequal in the last 30 years. There are also signs that inequality is leading to the concentration of political power. How has this happened? Is it a rule for any authoritarian regime? The last area is the study of China’s democratization process. Will China follow the prediction of the theory of social development as its per-capita income continues to rise? As this review has shown, China has succeeded economically, mainly because the country has adopted the standard growth recipe prescribed by neoclassical economics. That is, China is a normal country. There are enduring authoritarian regimes with high-income levels, but they are mostly monarchs. Will China follow other kinds of authoritarian regimes, especially those relying on bureaucratic rules, to democratize?

These areas do not comprise an exhaustive list of the interesting topics regarding China’s growth story. But they are certainly the most important for China’s future growth. China is still an unfolding story. It will remain an exciting source of academic research for social scientists.

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