1 China's New Strategy for Long-term Growth and Development:

Imperatives and Implications

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The New Model of Chinese Economic Growth

The Chinese economy is undergoing profound change in policy and structure. The change is necessary to increase the value of growth to the Chinese community, and to sustain growth into the future. The change is being driven partly by economic pressures that are emerging naturally from successful economic development, as labour scarcity and rapid increases in real wages change patterns of resource allocation, income distribution, environmental impact, and rates of economic growth, savings, investment and international capital flows. These changes that have emerged from the success of old patterns of growth are being reinforced by changes in national policy to secure more equitable income distribution, and less damaging impact on the domestic and international environment.

The changes are so comprehensive and profound that they add up to a new model of Chinese economic growth. This book describes the replacement of an old, uninhibited investment expansion model of growth, by transition to modern economic growth.

The book presents the results of recent research on various aspects of the transition to modern economic growth. The chapters that follow provide insights into recent changes and where they are likely to lead. They bring out some of the implications of change for China's interaction with the international economy.

Once an economy has stepped onto the escalator of modern economic growth it never stays still. China has been undergoing restless change at a dazzling pace since Communist Party decisions in 1978 committed the country to a path into market-oriented reform and integration into the international economy.

Change has been continuous and rapid. Every year of the reform period has thrown up new barriers to economic progress, new policy challenges, new solutions to some old problems and new patterns of economic activity.

But while change has been continuous, if we stand back and look at the reform period as a whole, we can identify three broad periods, each requiring policy and structural transitions before it could give a new shape to development.

The first is the era of strong growth in agricultural and rural incomes, roughly from 1978 to 1984. The second is uninhibited investment expansion from 1985 to 2011. The third is the transition to a modern economy, which commenced in 2012.

Two innovations in economic institutions underpinned the era of strong growth in agricultural and rural incomes: the replacement of the rural People's Communes by the Household Responsibility System; and the rise of township and village enterprises out of the redundant structures of the People's Communes. Institutional changes were supported by adjustments to agricultural pricing arrangements that improved farmers' terms of trade. The increases in incomes and their equitable distribution throughout China during this period provided the political and economic foundations for general market-oriented reform as well as the springboard for far-reaching reform of urban economic institutions.

Many other changes were occurring during the era of strong growth in agricultural and rural incomes that supported wider economic reform and transformation in later years. The reforms to foreign trade and investment, the financial system and enterprise governance that became important from the mid 1980s had long incubations. More fundamentally, the rehabilitation of the education and research systems after the Cultural Revolution and the far-reaching changes of Communist Party and state personnel were preconditions of future economic change.

That change took the form of transition from the mid 1980s into a long period of uninhibited investment expansion, which continued until about 2011. Urban and industrial investment were given priority and the investment share of output grew from high to higher levels to unprecedented rates at around 50 per cent of output late in the first decade of the new century.

This period was associated with high and rising savings as a proportion of income; the commitment of a high proportion of those savings in domestic investment; rapid expansion of industrial production through absorption of large numbers of rural migrants at wages that increased less rapidly than labour productivity; increasing focus on industrial exports—at first technologically simple and labour-intensive but with more complex and capital-intensive elements becoming an increasingly important part of the mix over time; intensive use of metals and energy; and, increasingly damaging domestic and global economic impacts.

Uninhibited investment expansion involved rapid catching up from a low starting point with the capital intensity and technology of the advanced countries. It was built around deep and deepening integration into global markets for goods, services, capital and knowledge.

The several features of uninhibited investment expansion were mutually supporting. Rapid industrial expansion and a steady real wage rate increased profits, and the savings share of income in turn supported high and increasing levels of investment and rapid economic growth.

Uninhibited investment expansion 1985–2011 had several subplots. A major focus of the early years (1985–1992) was the search for an ideological and political basis for internationally oriented growth.

Collective enterprises—the township and village enterprises—were the locus of the most rapid industrial, output and employment growth in the early years. From 1992, that mantle passed to the private economy—some of which was formed through the privatisation of what had been collective enterprises. The rapid increase in the private share of economic activity through the 1990s was arrested by the re-emergence in central roles in economic growth of large-scale, state-owned enterprises (SOEs) in the first decade or so of the 21st century—underpinned by the huge Keynesian fiscal and monetary expansions that were crucial to China quickly restoring growth momentum when it was challenged by the Asian Financial Crisis (1998–1999) and then the Global Financial Crisis (2008–2009).

Uninhibited investment expansion was extraordinarily productive. Output increased by an average of slightly more than 10 per cent per annum, with no weak periods from 1992 to 2011. This was the strongest sustained growth in history, exceeding the extraordinary postwar expansion of Japan to 1973 in average strength. Uninhibited investment expansion took Chinese average incomes (once they were measured correctly) from low levels into the ranks of middle-income countries. China came to have the world's largest total savings and surplus savings for international investment and the world's largest exports. It was (and remains) on a path to be the world's largest economy within a few years (PPP) or by end of the decade (national accounts at ruling exchange rates).

Despite, and because of, its achievements, uninhibited investment expansion was approaching economic, social and political limits through the first decade of the 21st century.

Amongst the signs of approaching economic limits, average output and income per person were nearing the levels at which other north-east Asian economies had experienced change in patterns and rates of growth. Per capita income in real purchasing power at the end of the first decade in the new century was similar to that in Japan a few years before its step down from high to moderate growth in the mid 1970s.

From about 2004, as China entered the turning period of economic development, the old growth model began to be challenged by increases in wages in excess of productivity. This development was reinforced when the work-age population began to decline in 2012.

The international economic environment became less benign for the old growth model. While China's huge current account surplus (over 10 per cent of GDP in 2007) had allowed other countries, especially the United States, to maintain growth while implementing other policies that would have brought it to an end, the great financial crisis of 2008 encouraged criticism of Chinese surpluses. Tepid growth in the old industrial countries after the financial crisis diminished opportunities for rapid expansion of exports, although continued growth in developing markets allowed some refocusing of China's geographic focus in trade expansion.

Uninhibited investment expansion was also approaching social and political limits towards the end of the first decade of the 21st century. The increase in income inequality between rural and urban residents and between workers and owners of capital and privileged positions in government and economy became the focus of increasing comment and tension. The mandatory purchase of peasants' land for urban development, which was a feature of uninhibited investment expansion, was increasingly controversial. International concern about China's increasing contribution to the build-up of concentrations of greenhouse gases in the atmosphere broke out as diplomatic tension at the Copenhagen meeting of the United Nations Framework Convention on Climate Change in December 2009. Increasing community concern about health and amenity impacts of domestic pollution reached a crescendo in early 2013. Longstanding community concern over corruption within government was explicitly identified as a potential source of political instability by party and state leaders in 2012 and early 2013, and the old model of economic development was recognised as being conducive to corrupt use of public office.

For all of these reasons, the need to move to a new model of economic development—to make the transition to an advanced modern economy—began to be discussed with increasing purposefulness amongst Chinese scholars and thoughtful officials from around the middle of the first decade of this century. It was not that uninhibited investment expansion was exhausted; it could continue to add to economic output at a rapid rate for a few more years. But there would have to be transition to a modern economy at some time in the near future, and leaving it too late would increase the strains and costs of change.

As several contributors to this book observe, economic forces and, especially, the turning period in the labour market have been driving structural change with increasing force since about 2004. Alongside this structural change, driven by rising real wages and real exchange rates, policy adjustments to reinforce change were discussed with increasing purpose within the Chinese policy community and, in due course, within high echelons of government.

So, China entered the third major transition of the reform era, the transition to an advanced or modern economy.

The transition to an advanced economy is characterised by the gradual fall in the share of GDP represented by industrial investment and urban infrastructure, heavy investment in education and upgrading of the quality of education, expansion of the consumption and the services shares of expenditure, reform and improvement of the legal and institutional bases for an advanced market economy, and rapid structural change to technologically sophisticated industry with a much larger proportionate place for services.

All of the standard sources of growth are affected by these changes. The labour contribution to growth is markedly lower, and the contribution of capital intensification moderately lower. The contribution of total productivity increases to growth can rise if the increasingly sophisticated economy is supported by the necessary institutional improvements. The outcome is likely to be average growth in output two or perhaps three percentage points below the average of the period of uninhibited investment expansion.

The necessary changes in economic institutions require restraint in the use of old-style fiscal and monetary expansion through public institutions to avoid downturns in economic growth. This implies acceptance of moderate cyclical slowdowns without large-scale Keynesian responses—although strong anti-recessionary responses, at some cost to desirable structural change, could be expected in response to a major downturn.

Much higher priority is assigned to domestic and international environmental amenity in the transition to an advanced economy: energy saving and reductions in the carbon intensity of production are major objectives of the 12th five-year plan (2011–2015).

While the desirability of reduced inequality has been prominent in official statements of policy goals right through the reform period, reduced inequality is an objective that attracts strong policy action in the transition to a modern economy. Rising real wages have been making a strong contribution to reduction in inequality from about 2008. This book provides data on the increasing and now large central government payments to rural education, health, transport, communications and an income safety net over recent years. Quantitative measures of inequality have begun to fall.

China's adoption of a new model of economic growth is of immense importance to people in China and everywhere. This book is an early attempt to take a close look at many of the features of the new model.

Structure of the Book

The transition to a modern economy—China's New Growth Model—requires adjustments in economic structure and policy and the strengthening of institutions for effective national and corporate governance and for effective market exchange. Dwight Perkins lays out the ground that has to be covered in Chapter 2.

Perkins argues that China needs to build on some emerging institutions in its economy and society, the substantial modification of some, and the replacement of others. Big changes are needed in the regulatory system, the political system as it relates to government economic decision-making, the legal system, land ownership, and the development of decentralised sources of government revenue.

Perkins points out that many features of current arrangements facilitate the widespread corruption that threatens political stability and economic performance. Reform in these areas is crucial to continuing prosperity and for the transition to a modern economy

Reform in a number of other areas is essential to the strong productivity growth that is required if reasonably rapid growth is to be maintained through the transition to a modern economy. Some of the most important of these involve reform in the relationship between urbanisation, the social welfare system, and the changing Chinese demographic structure. Others involve institutions that are important to modernisation of the financial system, the upgrading and expansion of research and development in engineering and the sciences, and the continued upgrading of the universities.

China has made major progress through dismantling inappropriate institutions. Perkins argues, however, that creating new and fundamentally restructuring old institutions is inherently more difficult than dismantling inappropriate institutions. It takes time, and the passing of time contributes to the slowing of GDP growth that is inevitable as per capita incomes rise and the economy and society become more complex.

Yiping Huang, Cai Fang, Peng Xu and Gou Qin call the new model for economic growth during the transition to a modern economy the 'new normal'. They argue in Chapter 3 that important changes to the Chinese growth model are already underway. They assess growth potential as probably having fallen from around 10 per cent during the first decade or so of the 21st century to six–eight per cent during the decade ahead. In the meantime, the current account surplus narrowed from by far the largest amongst substantial economies to well within the range of developed countries. Two well-established trends of the era of uninhibited investment expansion that had been thought to be undesirable and unsustainable were reversed: the consumption share of GDP started to rise, and income inequality as measured by the Gini coefficient began to fall.

Huang, Cai, Peng and Gou identify changes in factor markets, especially the labour market, as the primary drivers of the transition to the new growth model. Emerging labour shortages and associated rapid wage increases in recent years are largely responsible for the current transition to the 'new normal', with slower growth but more balanced structure. The authors propose that the next-step reforms should focus on redefining the relationship between the government and the market by liberalising factor markets, establishing macroeconomic policy frameworks that are compatible with expanding roles for markets and changing the government's role from directly supporting production and investment to facilitating innovation and industrial upgrading. They conclude that these reforms are necessary for China to complete the transition toward the new growth model and to avoid falling into the 'middle-income trap'.

In Chapter 4 Cai Fang and Lu Yang argue that, as a result of the shrinking working-age population (aged 15 to 59 years), all of the forces that have driven China's rapid economic growth over the past 30 years have diminished from about 2010. They estimate the average annual growth rate of potential output to be 7.2 per cent over the 12th five-year plan period (2011–2015) and 6.1 per cent over the 13th five-year plan period (2016–2020). Future sustainable growth requires deepening and extending the scope of economic reform, particularly the development of new and related areas to enhance potential growth. They also develop two scenarios in which an increase in labour force participation and improvement in total factor productivity (TFP) can significantly enhance the potential GDP growth rate. They use this to argue that a floor can be placed under the decline in the potential growth rate.

The transition to an advanced economy requires a fundamental transformation of China's economic growth pattern from heavy reliance on inputs of capital and labour to more rapid increases in TFP. The new growth model requires that central and local governments accept slower economic growth—and, in times of lower growth, desist from pumping up public investment through fiscal and monetary expansion that was so important in ending downturns in the era of uninhibited investment expansion. Policy should seek to accelerate growth by adjusting supply-side factors, rather than demand-side factors.

A competitive environment is vital for enhancing the potential growth rate in China in the era of transition to a modern economy. The government has an important role in improving China's TFP through reforms to strengthen institutions that are essential for the effective operation of the labour and financial markets, enterprise governance, and the government system.

In Chapter 5 Huw McKay and Ligang Song describe China's economic structure as both over-industrialised and under-urbanised relative to its level of income per head, while having a high degree of export orientation for such a large economy. They note that some aspects of the historical path of China's development and the economic structure that emerged from it were impediments to constraining damage to the environment and inequality of income and opportunity within acceptable bounds.

McKay and Song then outline desirable changes in policy to accommodate the new model of economic growth. These changes include the removal of factor market distortions through accelerating financial reform, wholesale reform of the *hukou* system that limits rights and services available to migrants from rural areas to the cities, continuing the current movement towards market-based pricing of energy and imposing prices on negative external costs to the environment, giving higher priority to investment in infrastructure than in industrial capacity, and dealing with some long-run fiscal questions that are important in the reallocation of resources across the economy that is necessary in the transition to a modern economy.

McKay and Song conclude by saying that the superordinate goals of China's transition to a modern economy—reducing 'over-industrialisation', optimising urbanisation and emphasising domestic absorption over foreign sales—are ultimately complementary. They also caution that there is much that is of value in the policy contours that have already emerged in pursuit of those inherently complementary goals. Yet, inside those contours, a political battle must still be fought in some major areas of policy and institutional reform—competition policy being amongst the most important of them.

China's high levels of saving not only provide capital for prodigious levels of domestic investment, but the excess of saving over domestic investment is a major source of finance for the rest of the world, and particularly for the highly indebted English-speaking countries led by the United States. In Chapter 6, Rod Tyers, Ying Zhang and Tsun Se Cheong discuss the implications of lower Chinese saving for the international economy. They point to lower savings coming from all three sources: households, enterprises, and government. The slower and more 'inward focused' growth to which the Chinese Government is now committed will reduce the excess saving available for international investment. Rises in consumption will reduce household saving. Reduced oligopoly profits and financial development will reduce corporate saving. The recent rise in provincial debt has already eliminated government saving. This reduction in Chinese savings rates coincides with reduced Japanese saving and hence the end of the 'Asian savings glut'. It must eventually raise the global cost of debt, although this has been postponed recently by quantitative easing (QE) in the United States, Europe and Japan.

The monetary reaction to reduced Chinese saving will see the transmission throughout the world economy of higher long bond yields, causing a new headwind against investment worldwide.

Tyers, Zhang and Cheong then discuss the implications of lower Chinese saving rates for capital markets and investment in the United States. The eventual rise in the cost of financing in the United States will not be conducive to US economic recovery, which will have negative effects on the global economy. A major offsetting force is fiscal consolidation in North America and some other parts of the world, reducing the demand for financing in deficit countries as global saving falls, and softening the impact of reduced Chinese surpluses on global private investment. Without continuing fiscal consolidation, however, serious global contraction could follow as investment expansion resumes in the old industrial countries and QE is withdrawn.

While China's increasing focus is on domestic rather than international demand from the perspective of its own economic transition, and while investment from China has been sought by the United States and other developed countries, its timing could be unfortunate.

Innovation becomes more important the closer China approaches the global productivity frontiers. Yixiao Zhou in Chapter 7 discusses how institutional quality will affect China's innovation performance. She presents the results of statistical analysis of firm-level data that suggest that institutional quality is critical for China's innovative performance and hence for the economy's future growth.

Stronger intellectual property protection clearly boosts the probability of a firm investing in innovation. The analysis suggests that the goals set in the 'National Medium- and Long-Term Program for Scientific and Technological Development (2006–2020)' are more likely to be met if firms become the major agents performing R&D activities. Zhou points out that improving the quality of domestic institutions is just the first step towards building a knowledge-intensive economy, becoming a global R&D player and contributing to the world pool of knowledge and technology.

The development of the agricultural sector has played a crucial role in Chinese economic transformation during the reform period (1978–2012). Li Zhou in Chapter 8 reviews the major achievements in China's agricultural development in the past, and discusses the challenges that the sector faces now. He notes that China can confront these challenges by deepening agricultural reform, including in relation to land ownership; by enhancing technological progress in agricultural production; by providing social support and protection for farmers as part of governments' efforts to reduce China's rural and urban income inequality; and, by modifying food consumption patterns in order to improve people's health and reduce the wastes of agricultural resources.

Li points out that the issues relating to farmers, agriculture, and rural areas are the weak links in the chain of China's economic development. Rural China is undergoing rapid economic and social changes, which have affected the ways in which farmers themselves, the traditional communities and the governments operate. Li concludes by saying that it is important for government policies to complement market mechanisms in facilitating the ongoing process of urbanisation, and creating more employment opportunities for both migrant workers and farmers, while maintaining rural social stability. The transition to a modern rural economy would be helped by governments adopting measures that conform to or respect, rather than overrule, farmers' own choices. These latter developments would be assisted by more democratic local governance.

Xin Meng in Chapter 9 uses official data sets on rural migrants' income and population to describe some important features of the rural–urban migration over the past decade and discusses their policy implications for China's future development of the labour market. The key findings from the survey data show that in the next few decades, the main addition to the labour force for Chinese cities will still come from the rural *hukou* population, as less than 30 per cent of the rural labour force had migrated to cities to work. Whether those remaining in rural areas will migrate depends largely on government policy. Currently, the lack of social welfare provision and social service access have deterred many people from migrating to cities. Even when they go to the cities, they only stay for a short period, on average eight to nine years. If this duration can be doubled, rural migrant labour supply in cities could be doubled. Another finding of her work is that migrant productivity reaches a peak at the 24th year. The current average duration of migration, however, is far away from the productivity peak, indicating significant opportunities for increasing productivity by increasing duration. Migrant duration is also affected to a large extent by policy. While in cities, rural migrants work extremely long hours, reflecting weak protection of conditions for migrant workers. Long work hours are identified as being related to migrant mental health problems. Social welfare reform for migrants in cities is therefore an important area of reform.

In Chapter 10, Christine Wong examines the current state of China's public finances and discusses the reforms necessary to improve their capacity to support the long-term growth of the economy. Amongst much else, she discusses the macroeconomic stabilisation role of the budget, and the way that local government finances make macroeconomic control more difficult. Wong focuses on two critical areas where reforms are urgent—the persistence of extra-budgetary resources and fragmented control of the budget, and the tendency toward excessive public investment. Both have remained stubbornly resistant to reform.

By focusing on the fragmentation of budget control and the decentralised and extremely problematic management of public investment, Wong has traced the roots of the government's current macroeconomic problems to weaknesses in the fiscal system. She proposes that to support sustainable, long-term growth in the Chinese economy, the government must regain control over macroeconomic management, by curbing local government borrowing and investment, establishing a framework for managing subnational borrowing, and introducing a monitoring and regulatory framework that requires local governments to report on their debt.

Wong also suggests that the government regains fiscal discipline by assigning the oversight authority and responsibility over the comprehensive budget with all of the components to a single institution. The Ministry of Finance is most suitable for this purpose. The implementation of these reform measures would require political support from the top leaders to adjust the distribution of authorities across central institutions to elevate the Ministry of Finance and put it firmly in charge of all fiscal resources. Support should also be given to enhance the capacity of the National People's Congress to play its supervisory role over the budget—and hence the Ministry of Finance—that is assigned to it by the Constitution.

Improving the business environment is an important policy objective, which can greatly enhance private firms' contributions to productivity growth. Xiaolu Wang, Jingwen Yu and Fan Gang in Chapter 11 use output from four enterprise surveys to explain changes and provincial differences in China's business environment in recent years, and to draw out some policy implications. The business environment in China generally improved over the period 2006–2012.

Wang, Yu and Fan also identify some negative developments for the business environment in China. For example, the focus of expansionary fiscal policy in response to the global financial crisis on SOEs over the sample period had the effect of squeezing out normal business demand on credit and damaged the non-state sector. Firms covered by the survey focused complaints on 'openness, fairness, and equity' of policies and government administration. Problems include non-transparency of policies and government administration, uneven enforcement of regulations and, more generally, unequal treatment for different enterprises. The authors also find that sectors with greater market competition have better business environments than monopolised sectors.

Wang, Yu and Fan also reveal discriminatory treatment between SOEs and non-state enterprises (NSEs), which have a negative effect on the operation and performance of NSEs. They conclude by saying that it remains an important task for governments at different levels, through their policy changes, to improve the business environment which is conducive to the implementation of the new growth strategy adopted by the Chinese Government.

In Chapter 12 Shiyi Chen and Jane Golley estimate the changing patterns of 'green' TFP (GTFP) growth of 38 industrial sectors during the period 1980–2010 to assess whether or not Chinese industry was on the path towards a sustainable form of low-carbon growth during those years. China's industrial GTFP growth was significantly lower when productivity takes account of the negative impact of carbon dioxide emissions in the production process. Through the period covered by the study, both in aggregate and for the majority of sectors, GTFP growth was predominantly shaped by technical change. The rate of technical change increased steadily from the mid 1990s to the early 2000s, but declined continuously after that, in contrast with fluctuating but generally low rates of efficiency growth. GTFP growth was positive in the majority of sectors and in aggregate, both over the entire period and in each sub-period.

Chen and Golley reveal, however, that between 2003 and 2010, GTFP growth was not only low (and well below the 50 per cent level often taken to signal the transition to 'sustainable' growth), but lower than in the preceding decade. This finding suggests that Chinese industry seemed to have lost its way in going green. The final year of the period covered by this chapter is late in the period of Uninhibited Investment Expansion. The hope to which the authors make reference at the end of the chapter is presumably drawn from the changes in policy and structure than are emerging in the transition to a modern economy.

Yongsheng Zhang, from the State Council's Development Research Centre, and a participant in the major World Bank–State Council study of green growth, argues in Chapter 13 that green growth could play a significant role in China's modernisation. The barriers against green growth in China stem from institutional weaknesses in its distorted market system. China has advantages that are not available to old developed countries in seeking to establish a pattern of green growth. It can leapfrog over old industrial practices into practices that are appropriate in the modern economy.

Zhang describes green growth as involving the decoupling of economic output from heavy dependence on use of material resources, carbon emissions and other sources of environmental damage, through the creation of new green products markets, technologies, investments, and changes in consumption and conservation behaviour.

Zhang's conception of green growth is based on three key concepts: that economic growth may be decoupled from rising greenhouse gas emissions and environmental degradation, that the process of 'going green' can itself be a source of growth, and that 'going green' is part of a virtuous circle which is mutually reinforcing with growth. To seize the opportunities for a transition to a sustainable pattern of modern economic growth, China should seek green transformation of traditional sectors, expansion of emerging green industries and expansion of service sectors. Implementation of these approaches requires reforms in a number of areas: transformation of government functions, consolidation of market exchange, tougher policies and regulations on emission reduction, and environment protection. Zhang warns that there is a window of opportunity in the next two decades for China to take action; if missed, China will have to pay a much higher price for 'going green'.

Ross Garnaut in Chapter 14 describes recent progress in one of the central elements of China's transition to a modern economy: the breaking of the links between economic output and energy use and between energy use and carbon emissions. China's growth in the era of uninhibited investment expansion was characterised by exceptionally high energy use and greenhouse gas emissions. These features of old-style Chinese growth made the country the world's largest source of greenhouse gas emissions in the final years of uninhibited investment expansion. It was associated with increasingly severe domestic environmental problems, and increasing international pressure on China as a disproportionate source of contemporary and prospective global warming tendencies. Heavy energy use and reliance on imported fossil fuels for an increasing proportion of China's expansion raised concerns for energy and economic security within China.

The change in the trajectory of Chinese energy use and emissions growth in the transition to a modern economy is as outstanding as the earlier extremes in energy and emissions intensity of growth. So far the transition has been secured mainly through the use of instruments out of the old economy: regulatory intervention to close plants with unacceptably high energy or emissions intensity, mandatory provincial and local limits on energy use and emissions, imposition of discriminatory high prices of inputs on high energy use and emissions produced by particular industries and plants, discretionary subsidies and other support for investments in low-emissions plants, and tilting of investment approvals processes in favour of low-energy and low-emissions plants and against high-energy and high-emissions plants.

Increasingly the discussion policy is exploring interventions based on the introduction of market mechanisms and the pricing of carbon externalities. There is movement towards removal of transport preferences and favourable pricing for fossil fuels, experimentation with emissions trading systems in two provinces and seven cities. Resource taxes are being redesigned to modify use and carbon emissions, and the Ministry of Finance has been undertaking research on carbon taxes. Elements of each of these approaches to policy are likely to find a place in the future Chinese energy and greenhouse gas policy mix.

While strong energy and emissions intensity targets were introduced from the beginning of the 12th five-year plan (2011–2015), a marked change in energy and emissions intensity was not powerfully evident in the growth statistics until 2012. The much lower trajectories of energy use and emissions in 2012 are likely to be extended progressively through the transition to a modern economy. For this reason amongst others, when it is useful for exposition to draw clear temporal boundaries between periods, we see 2011 as the last year of uninhibited investment expansion, and 2012 as the first year of transition to a modern economy.

China's progress on changing the trajectory of greenhouse gas emissions transforms what is possible in effective international action to constrain global warming. Garnaut suggests that this could provide the basis for global tightening of emissions reduction targets at the United Nations Conference of the Parties to the Framework Convention on Climate Change, to be held in Paris in 2015.

China has recently become the world's largest energy consumer and, yet, it is still only in the middle stages of development. In Chapter 15, Simon Wensley, Stephen Wilson and Jane Kuang describe China's energy policy Trilemma. The Trilemma refers to the tension between maximising security of energy supply, minimising cost of energy and minimising environmental impacts of emissions.

Wensley, Wilson and Kuang point out that resolving the Trilemma is the key challenge for energy policy makers everywhere. They explore the Trilemma through four case studies: the 1970s oil crisis, China's cost revolution in nuclear power that is quietly unfolding today, the US unconventional oil and gas techno-economic revolution, and the challenge for Japan in closing the 30 Gigawatt gap in the power system post-Fukushima.

With these case studies as background, the authors discuss the opportunities and challenges in the development and management of China's resources They highlight the increasing role of imports in balancing domestic supply in oil, gas, coal and uranium through the period of uninhibited investment expansion. They also explore emerging technologies, many of which China is actively developing, that have the potential to transform energy supply and use. These include development of unconventional gas and oil sources, and the electrification of transport including through electric automobiles. Security of supply is already a high policy priority, most acutely in oil.

The tensions between the three corners of the Energy Policy Trilemma are steadily becoming more acute in China. As China's energy import dependence deepens from oil to gas, security of supply is expected to increase rather than decrease in importance. Despite these challenges, the authors conclude that structural change in the Chinese economy towards a greater weighting of less energy-intensive secondary industries and higher value-added services are expected to moderate the strong linear relationship of the past two decades between energy requirements and GDP. Improvements in technical energy efficiency will further help to moderate the rate of energy demand growth.

In Chapter 16, Bijun Wang, Miaojie Yu and Yiping Huang discuss the financial constraints on Chinese outward direct investment (ODI) from the private sector. Using a firm-level panel dataset from Zhejiang Province between 2006 and 2008, they find that firms with access to finance that is less constrained are more likely to pursue ODI, and if they are involved in ODI to make larger investments. High productivity does not mitigate the negative impact of financial constraints on engaging in ODI. They conclude that, policy-wise, if financial constraints are not overcome, many productive and competitive Chinese private enterprises are likely to be shut out of ODI opportunities. As a result, the quality and return of Chinese ODI and the image and reputation of overseas Chinese enterprises will be compromised.

In Chapter 17, Kunwang Li and Bingzhan Shi examine the quantity and quality of China's information and communication technology (ICT) exports and their determinants. They find that China's ICT exports are characterised by high quantity and low quality. Patterns of foreign direct investment (FDI), opportunities for processing trade and government policy support are the main determinants of China's ICT export growth. Expansion of processing trade increases quantity but decreases quality. On the other hand, FDI and government policy have the opposite impact.

Expansion of the quantity of China's ICT exports employs more labour, and increases consumption of natural resources, pollution and damage to the environment. Upgrading quality rather than simply increasing quantity needs to be the central feature of ICT exports in the transition to a modern economy.

The authors expect that China's export sector will be transformed from being driven by quantity, to being focused on quality and high value-added products. They conclude by saying that this transformation is consistent with the new growth strategy adopted by the Chinese Government in confronting the new challenges for future growth.

The book as a whole describes a great deal of progress across a wide range of issues in China's transition from uninhibited investment expansion, to the building of the foundations of a modern economy. The transition to a modern economy is in its early stages. Immense challenges lie ahead, especially in the institutional and legal developments that are discussed in the first few chapters in the book. The evidence presented in this book says, 'so far so good'.