

POLICY ASSISTANCE SERIES **1/2**

FAO Regional Office for Asia and the Pacific

RAP
PUBLICATION
2006/05

Rapid growth of selected Asian economies

Lessons and implications for
agriculture and food security

China and India



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ISBN 92-5-105508-4

ISSN 1819-4591

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Foreword

Asia and the Pacific region is the most economically vibrant region in the world today, having achieved and maintained accelerated economic growth in recent decades. As a result, within one generation, many people in this region have escaped from the poverty trap. Ensuring an enabling policy and economic environment, supported by adequate investment and strengthened human and institutional capacities have fuelled this growth; advances in the agriculture and rural sectors have played their part and, in turn, they have benefited from good overall economic performance. Among recent trends, growth in China and India is noteworthy in terms of its sheer scale and the degree of regional and global impact that is being manifested at an increasing rate. In these two major countries, as in other Asian economies, the agriculture sector continues to play a pivotal role in almost all stages of development; smaller vibrant economies in the region, such as Thailand and Viet Nam have demonstrated how effectively they have made agricultural growth and trade contribute to reduction of poverty and food insecurity. Even in the Republic of Korea — regarded as a paragon of manufacturing-based export-led growth — agriculture has nevertheless played a crucial role in the initial stages of development.

Despite Asia still having the largest number of food-insecure people, the current trends of economic growth and agricultural performance indicate that the region stands a good chance of reaching the first Millennium Development Goal (MDG1) — halving the proportion of hungry people by 2015. However, achieving the World Food Summit (WFS) goal of halving the number of undernourished will require significant acceleration of hunger reduction efforts in the next ten years. Achievement of MDG1 and the WFS goal could be accelerated if the positive impacts of rapid growth in the larger economies are captured by other countries in the region, including in their own agriculture and rural development sectors. These sectors are an essential conduit for the benefits of economic growth to reach the less favourably placed segments of the population.

As a part of their mandate to analyse the driving forces of change in the region and the emerging policy assistance needs of member countries, the Regional Office for Asia and Pacific and the Policy Assistance Division of the Food and Agriculture Organization of the United Nations (FAO) launched a study to improve understanding of these major developments and their implications. In this context, they conceived and carried out a diagnostic study on *China, India and selected Asian economies: implications of rapid economic growth for agriculture and food security in Asia and Pacific Rim countries*. The study has been elaborated by national experts and covers the experience of five selected Asian countries — China, India, Republic of Korea, Thailand and Viet Nam. In the case of China and India, the study analyses their recent phenomenal growth and the implications for their own agriculture sectors and those of other countries, particularly in the region but also further afield. For the Republic of Korea, Thailand and Viet Nam, the study covers similar ground but draws particular attention to the lessons of experience from policies, institutional reforms and programmes implemented in these countries which might be of value to a wider regional audience.

Considering the recent volumes of literature on the strides made by China and India, the FAO case studies have not sought to duplicate the work of others but instead have drawn on them where appropriate, building further analysis and interpretation on existing knowledge. The studies help to gauge the existing and emerging impacts on countries in the region; in addition, the Chinese and Indian experience gives important insights into the major factors driving economic growth, highlights being the roles of the agriculture and non-agricultural sectors and the major policy and institutional changes that have facilitated agricultural growth, poverty reduction and food security. They also draw attention to crucial challenges to surmount if growth is to be sustained in these two countries.

The experiences of the Republic of Korea, Thailand and Viet Nam provide interesting examples of major success in economic transition and the accompanying evolution of agricultural development and food security. Although the countries differ in stages of development and in their historical


contexts, initial conditions and economic systems, each has made significant strides in addressing poverty and food security by adopting policy and institutional measures tailored to specific contexts. Documentation of their experience is expected to provide relevant lessons to a number of countries that are presently grappling with similar issues, including the reduction of inter-sectoral disparity, adjustment of domestic policies in tune with the new rules of international trade and sustaining agricultural growth and rural development to eradicate poverty and hunger.

The results of the diagnostic study are presented in a set of three volumes. This second volume presents the country studies on China and India, which discuss agricultural development and economic growth and the implications of rapid growth in these countries for their own economies and those of other countries in the region and beyond. Volume 1 presented a synthesis of the experiences, lessons and implication derived from the five country studies supplemented by additional information from various published sources. Volume 3 presents the country studies on experiences and lessons from Republic of Korea, Thailand and Viet Nam.

We hope that readers, particularly those concerned with agricultural development policy, will find the diagnostic study interesting and useful in their work. This work needs to be addressed further and FAO invites other national and regional institutions that are active in analytical and policy fields to join forces for future endeavours.



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Acknowledgements

The Regional Office for Asia and the Pacific and the Policy Assistance Division are pleased to express on behalf of FAO profound gratitude to the many senior officials of governments who collaborated with us in this work; to the authors of the national country studies and the resource persons and referees. We also take this opportunity to express our gratitude to the Government of Republic of Korea which funded the Seoul Workshop. Among its own staff, FAO acknowledges the leading role played by the Policy Assistance Branch for Asia and the Pacific in Bangkok, in particular Purushottam Mudbhary who organized and coordinated the preparation of country studies by the authors and inputs of resource persons and the workshop in Seoul, and Saifullah Syed, who launched the study and organized the first review workshop in Bangkok. Effective contributions from FAO headquarters involved many officers, and in particular Neela Gangadharan and Carlos Santana of the Policy Assistance Division.

The country studies in this volume are principally the work of national experts and their collaborators. The study for China was prepared by Jikun Huang, Director, and Jun Yang, Research Fellow, of the Center for Chinese Agricultural Policy, Chinese Academy of Sciences, and Scott Rozelle, Professor, Department of Agricultural and Resource Economics, University of California at Davis. The India study was prepared by Bibek Debroy, Secretary-General, PHD Chamber of Commerce and Industry, and Laveesh Bhandari, Director, Indicus Analytics.

Individual country studies benefited from the comments and suggestions received from senior government officials and resource persons who participated in the workshops in Bangkok (June 2005) and Seoul (December 2005), as listed in Appendices 1 and 2 of Volume 1, and referees who reviewed the draft country studies. This distinguished group included Ammar Siamwalla (Thailand); Arsenio Balisacan (Philippines); V.S. Vyas, Y.K. Alagh, S.S. Acharya and Rajiv Mehta (India); Debapriya Bhattacharya (Bangladesh); and Hari K. Upadhyaya (Nepal). The FAO team in Rome (Neela Gangadharan and Carlos Santana) and Bangkok (Purushottam Mudbhary) and Randy Barker, consultant, provided comments and suggestions on various drafts. Robin Leslie provided editorial assistance in the preparation of this volume.

PART I

China's rapid economic growth and Its implications for agriculture and food security in China and the rest of the world

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Abbreviations and acronyms

ATC	Agreement on Textiles and Clothing
CAPSiM	Chinese Agricultural Policy Simulation Model
CBE	Commune and brigade enterprises
CCAP	Center for Chinese Agricultural Policy
CEEC	Central and Eastern European Countries
CGE	Computable general equilibrium
DRC	Development Research Center of State Council
Efta	European Free Trade Association
FAO	Food and Agriculture Organization of the United Nations
FBD	Five Balanced (or integrated) Developments
FDI	foreign direct investment
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GTAP	The Global Trade Analysis Project
HRS	Household responsibility system
IFPRI	International Food Policy Research Institute
IIASA	International Institute of Applied Systems Analysis
LEI	Agricultural Economics Research Institute of Northland
MDGs	Millennium Development Goals
MOFTEC	The Ministry of Foreign Trade and Cooperation
NAFTA	North American Free Trade Area
NDRC	National Development and Reform Commission
nec	not else classified
NSBC	National Statistical Bureau of China
OECD	Organisation for Economic Co-operation and Development
PPP	Purchasing price parity
R&D	Research and Development
RE	Rural enterprises
ROW	Rest of world
Sacu	Southern African Customs Union
SOE	State-owned enterprises
TFP	Total factor productivity
TRQ	Tariff-rate quotas
TVEs	Township and village enterprises
WFP	World Food Program
WHO	World Health Organization
WTO	World Trade Organization

Executive summary

A. Introduction

China's economy has experienced remarkable growth since economic reform initiated in 1979. The rapid economic growth has been associated with unprecedented progress in poverty alleviation. Based on China's official poverty line, the absolute level of poverty incidence fell from 33 percent in 1978 to less than 3 percent in 2004. Even based on World Bank's US\$1/day (in PPP terms) poverty line, rural poverty incidence also fell from more than 30 percent in the early 1990s to about 8 percent in 2004.

While past accomplishments are impressive, there are still great challenges ahead. Income disparity rose with economic growth. There is also growing concern regarding the implications of China's rapid growth upon the rest of the world. The overall goals of this study are three-fold: 1) outline the main changes in agriculture, food security and rural development and policies that have been associated with overall economic growth; 2) extrapolate these trends in the future and assess the implications for internal food security; and 3) assess the implications of the overall rapid economic growth of China for sustainable food security and agricultural development in other countries, particularly in Asia with significant attention to the greater Pacific Rim.

B. China's economic growth and agricultural and rural development

Overall economic growth

Average annual growth rates of the GDP have reached nearly 10 percent in the past 25 years. In the early reform period (1979–1984), the household responsibility system (HRS) significantly increased agricultural productivity. Growth in agriculture provided a crucial foundation for the successful transformation of China's reform economy. Since the mid-1980s, rural township and village enterprises' (TVEs) development, measures to provide a better market environment through domestic market reform, fiscal and financial expansion, the devaluation of the exchange rate, trade liberalization, the expansion of special economic zones to attract foreign direct investment (FDI), state-owned enterprise (SOE) reform, higher agricultural prices and many other factors all have contributed to China's economic growth.

Rapid economic growth has been accompanied with significant structural changes in China's economy. Whereas agriculture accounted for more than 40 percent of the GDP in 1970, it fell to 15 percent in 2004. China's export (import) to the GDP ratio increased from less than 6 percent in 1980 to 36 percent (34 percent) in 2004. China also became the world's largest recipient of FDI in 2004.

Agricultural and rural development and food security

Average annual growth rates of agricultural GDP reached 4.5 percent from 1979 to 2004. In the meantime, China's agriculture has also undergone significant structural changes. The share of cropping in total agricultural output fell from 82 percent in 1970 to 51 percent in 2004. Within the crop sector, production has been shifting to more labour-intensive and higher-value crops.

A number of factors have simultaneously contributed to agricultural and rural development. These include the HRS that transferred the collective agricultural production system to individual farms by contracting land-use rights to individual rural households, technological change, price and marketing reforms, trade liberalization, irrigation expansion and creation of off-farm employment. By 2003 about half of China's rural labour force earned at least part of its income from off-farm jobs. Non-agricultural income has exceeded agricultural income since 2000.

Growth in production has substantially increased per capita food consumption in China. Per capita food availability per day rose from 1 717 kcal in the early 1960s to more than 3 000 kcal by the late 1990s. Access to food in rural China has also improved over time primarily through land that was equitably allocated to farmers, market infrastructure development and government disaster relief programmes as well as non-farm employment.

Impacts on poverty reduction

Overall economic growth has contributed to most of rural poverty reduction in China. During the past 20 years, a 1 percent increase in per capita GDP led on average to a 0.7 percent decline in rural poverty incidence. However, economic growth is an essential but not sufficient condition for nationwide poverty reduction. Given the same growth of GDP, a 1 percent increase of agricultural share in the GDP will lead to a nearly 1 percent drop of poverty incidence. Off-farm employment is also critically important for poverty reduction in China. Government investment in agriculture, rural infrastructure and rural TVE development is also important in this respect.

Challenges

While progress in agricultural and rural development has been notable, there are also many lessons to be learned and great challenges ahead. China's rapid economic growth has been accompanied by widening income inequality. In the agriculture sector, China may face major challenges in its war against water scarcity and increasing labour productivity. Trends in environmental degradation suggest that there may be considerable stress on the agricultural land base. Other environmental stresses are soil erosion, salinization, the loss of cultivated land and decline in land quality.

C. Prospects for China's economic growth in the future

China's growth environment is strongly conducive for its development despite the fact that there are some associated risks. The key forces that will favour China's economic growth in the future include macroeconomic stabilization, high domestic savings, an abundant and enormous pool of rural labour, increased spending in research and development (R&D), a rising trend in human capital, an improving market environment and governance, smooth urbanization, trade liberalization, a rising FDI and a national strategy to pursue "Five Balanced Development". There are also a number of factors that may limit China's economic growth over time. These include unexpected internal and external macroeconomic instability, a declining growth rate for the labour force, an increasing ageing population, a likely decline of the domestic saving rates in the long run, a diminishing natural resource base for rapid economic growth and intensification and sustainability of agricultural production in the coming decades.

Based on the overall evaluation of China's growth environment in the next two decades, our baseline scenario projects that the average annual growth of China's GDP will be about 8.9 percent from 2001 to 2005, 8 percent from 2006 to 2010 and 6 to 7 percent in the following decade. With these growth rates, by 2020 China's per capita GDP (about US\$3 400) will approach the average income of the high-to-middle income countries (in 2000). Total GDP in 2020 will be 4.3 times as large as that in 2000, making China the third largest economy in the world (just behind the United States and Japan).

D. Domestic implications of China's rapid economic growth

The five major domestic implications of China's rapid economic growth are summarized here. 1) China will play an even greater role in the global economy. By 2020, China will emerge as the second largest importer and exporter in world. Continuously seeking a favourable external trade and political environment is one of the most important factors for China's sustainable economic growth. 2) Given China's commitments to agricultural and rural development it is likely that China's rapid economic growth will threaten neither its own food security nor food security in the rest of

the world; instead it may enhance both China's and the world's food supply. 3) China needs to continue restructuring its agricultural sector as the economy moves towards globalization. China has a comparative advantage in horticulture, pork, poultry, fish and processed foods, and the export of these commodities will increase in the next two decades. To reap the opportunities resulting from trade liberalization, China needs to continue creating a favourable development environment so that agriculture will undergo a successful restructuring. 4) While rapid economic growth under trade liberalization will facilitate China's agriculture to shift towards sectors in which it has greater comparative advantage, the impacts may differ among farmers. Not every farmer in every region can respond appropriately to trade liberalization. The degree and speed of adjustment will vary among regions as well as farmers within the region. Farmers in many less-developed provinces in the west and north may not gain from trade liberalization. Last but not least, China's rapid economic growth under globalization will have more substantial implications on its non-agricultural sectors. China has a stronger comparative advantage in many non-agricultural sectors, in particular textiles, apparel and labour-intensive manufacturing.

E. International implications of China's rapid economic growth

China's rapid economic growth will provide both opportunities and challenges for the rest of the world. Overall, the opportunities are projected to far surpass the challenges. 1) China will significantly increase its imports of many land-intensive agricultural commodities (e.g. oilseed, feed, sugar and cotton) and also some labour-intensive products (e.g. tropical and subtropical fruits, processed foods, some pig and poultry parts). Increasing imports of these agricultural and food products will provide opportunities for many developing countries in South and Central America and some developed countries (e.g. the United States, Canada and Australia) to expand their production. 2) China's rapid economic growth will not be associated with a rise in the imports of rice and wheat, as the only major cereal that will experience a growth in import is maize used as feed. These results imply that China's rapid growth is unlikely to threaten the overall world staple food supply and rising staple food prices in the world market. 3) China's exports of many horticultural products and processed foods will rise over time. The rising exports of these commodities in which China has a comparative advantage will challenge those countries that are exporting the same commodities to world markets. 4) China will become more competitive in the textile and apparel sectors. This will have significant implications for many developing countries (e.g. India and other South Asian countries) that are currently exporting these products. Last but not least, China will significantly increase its imports of natural resource products. However, our simulation also shows that the rise in productivity and efficiency in the use of natural resources will considerably reduce imports of natural resource products.

F. Concluding remarks

Developing economies have to recognize the importance of both domestic and external policies in achieving sustainable growth. China's rapid growth would not have been possible without its domestic economic reforms, macroeconomic stability and its "open-door" policy. China's experience also shows that institutional innovation, technological changes, market reform and infrastructure development are critical to agricultural growth and the improvement of the nation's food security. While overall economic growth is a primary and essential condition for mass poverty reduction, the nature of growth, particularly agricultural growth in the initial stage of economic take off and non-farm employment during industrialization are other important factors shaping the trends in China's poverty reduction. Successful growth in the agriculture sector facilitates the economic transition from agriculture to industry/service, and from rural to urban economy.

While there are a number of challenges related to economic growth and income inequity, we are still optimistic regarding China's development in the future. China has been making significant efforts to balance its economic growth and income inequality. With increasing dependence on the external

sector, China has been developing and may need more effort to enhance its long-term partnership with all trade partners.

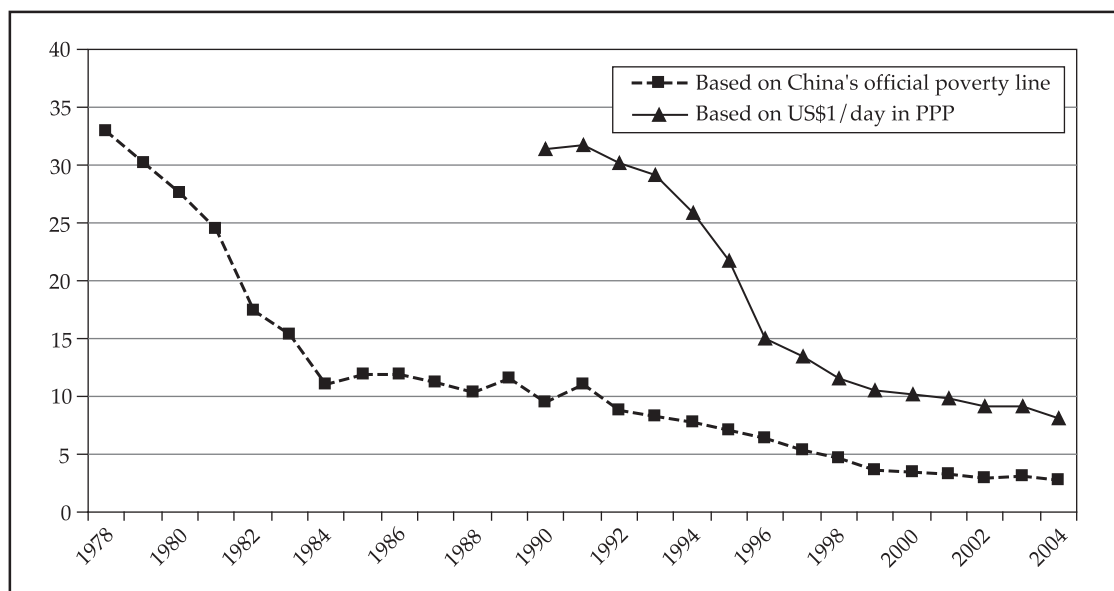
Although China will not threaten world food security and domestic production will continue to grow and meet the increasing demand for most food and agricultural products, China may require more efforts to enhance its agriculture and rural sectors as well as non-farm employment of rural labour so that the rural/urban income disparity will not increase further. The efforts include but are not limited to: (i) investment in agricultural and rural infrastructure; (ii) investment in rural education; (iii) creating better R&D and a technology innovation system; (iv) supporting institutions related to farmers' associations and marketing; (v) sustainable use of limited water resources; (vi) avoiding environmental degradation related to the agricultural land base; (vii) improving the quality of all agricultural products and the ability to effectively implement and regulate quality standards to meet increasing demand from own domestic consumers and better compliance with international standards.

Our analyses also show that China's rapid economic growth will provide more opportunities than challenges to the rest of the world, and overall the rest of the world will gain from China's economic expansion; however this general conclusion may not hold for some countries. The rapid growth of China's economy will help those countries with a comparative advantage in many land-intensive products to expand their production and increase their exports to China. Developing countries can export agricultural products to China, particularly soybeans, other oilseed, maize, cotton, sugar, tropical and subtropical fruits, as well as some livestock products (e.g. milk, beef, mutton), although they have to compete with other exporters from developed countries such as the United States, Canada and Australia. While many other changes associated with China's economic growth are not analysed in this study, we believe that there are also more opportunities than challenges as the Chinese economy develops. The examples include but are not limited to education, international tourism, China's agricultural technology and China's capital investment in other countries.

1. Introduction

China's economy has experienced remarkable growth since economic reforms were initiated in 1979. Although there is a cyclical growth pattern, China's economy has outperformed almost all other countries in Asia and has been one of the fastest growing countries in the world since 1980 (World Bank 2002). The annual average growth rate of the GDP reached nearly 10 percent in the past two decades (NSBC 2004). The real GDP in 2004 was 10.3 times that in 1978. This growth is for an economy with 1.3 billion people (or more than 20 percent of world population) in 2004.

China's rapid economic growth has been associated with unprecedented progress in poverty alleviation and material well-being. In the past two-and-half decades, based on China's official poverty line, more than 230 million Chinese rural residents have escaped poverty, and the absolute level of poverty fell from 260 million in 1978 to less than 30 million in 2003 (NSBC 2004). The incidence of rural poverty has fallen equally fast, plunging from 32.9 percent in 1978 to less than 3 percent in 2003 (Figure 1).



Source: See Appendix Table 1.

Figure 1. Poverty incidence (%) in rural China, 1978–2004

Food security, one of the central issues of concern to policy-makers in China, has also improved significantly since the late 1970s. At the national level, in contrast to many earlier analysts who expected that China would put pressure on world food security in the course of the rapid industrialization and liberalization of its economy, net food import growth has not occurred. In fact, even after more than 25 years of reform and rapid growth, China has continued to be a net exporter of food. In the meantime availability of food has increased significantly over time (NSBC 1995–2005). At the microlevel, China also has made remarkable progress in improving household food security and reducing the incidence of malnutrition during the past two decades. According to a publication by FAO (2002), the number of people who suffered from any sort of malnutrition in China declined from 193 million in 1990/1992 to 116 million in 1997/1999, or from 16 percent to 9 percent in total population.

The rapid growth has also been accompanied by significant structural changes in the economy. Rising income together with urbanization and other dynamics of the economy have resulted in major

changes in demand and consumption patterns (Huang and Bouis 1996; Fan *et al.* 1995; Huang and Rozelle 1998), which have formed part of the driving force that stimulated the structural changes in the economy. Agricultural share in total economic output had declined from about 40 percent in 1970 and 30 percent in 1980 to 15 percent in 2004 (NSBC 2005), while the share of services has risen over time. Within the agriculture sector, considerable structural adjustments have also been observed as a result of changes in the pattern of food consumption.

While past accomplishments are impressive, there are still major challenges ahead. Income disparity, for example, rose with the economic growth. There are significant income disparities among regions, between urban and rural, and among households within the same location (Cai *et al.* 2002; World Bank 2002). Although the average annual growth rate of China's agriculture sector was much higher than population growth in the reform period, high input levels in many areas of China and diminishing marginal returns mean that increasing inputs will not provide large increases in output. In the future, many have predicted that almost all gains will have to come from new technologies that could significantly improve agricultural productivity (Fan and Pardey 1997; Huang *et al.* 2003a; Huang *et al.* 2002).

Trade liberalization might further challenge China's agricultural and rural economy. Debates on the impact of the World Trade Organization (WTO) on China's agriculture continue. Some argue that the impact of trade liberalization on China's agriculture will be substantial, adversely affecting hundreds of millions of farmers (Carter and Estrin 2001; Li *et al.* 1999). Others believe that, although some impacts will be negative and even severe in specific areas, the overall effect of accession to agriculture will be modest (Anderson *et al.* 2004; van Tongeren and Huang 2004; Martin 2002).

There is also concern regarding the implication of China's rapid economic growth on the rest of the world. Many perceive that China's economic growth and its transformation will have profound effects, not just for its own people but also for many others further afield. Such effects could be a combination of new market opportunities arising from enhanced purchasing power, and the greater competitiveness of China's economy as a producer of selected products. However, few studies have been found in the literature.

In exploring what the growth of China's economy might mean for China and the rest of the world, it is worth observing that China has a large agriculture sector. The performance in this sector is of great significance for future policies and strategies to achieve the Millennium Development Goals (MDGs), sustainable food security, agricultural and overall socio-economic development. First of all, China offers hope for a significant reduction in the overall numbers of the poor in the world despite the fact that even in the country poverty is entrenched in certain areas owing to various factors. Reduction in poverty in China would dramatically change the global numbers of the poor.

It is clear that rising income in China will in the first place create pressure for structural reform of its domestic agriculture/rural development and food sectors to cope with changing demand size and evolving consumer tastes. It is necessary to have a full understanding of the internal sectoral adjustments: Only with this knowledge is it sensible to assess the extent to which China will need external supplies to meet needs (due to domestic incapacity to cope or to compete) or will generate new surpluses directed at other countries. These sectoral adjustments are expected to also be significant in terms of the impact they are likely to have on other countries in Asia and around the world through trade and commerce both in terms of opportunities as markets and as exporters.

It is also expected that the continued growth of China will significantly affect the balance and direction of trade, trading opportunities and the degree to which the playing field is leveled for smaller countries abroad. It will call for timely diagnosis of the growth pattern in China so as to put policies in place to optimize gains and minimize losses and marginalization.

In sum, the rapid development of China has implications for its own policy-makers, as well as for policy-makers from other countries. In terms of domestic policy debates in China, the issues of importance remain rural poverty and farmer income, food security and safety, natural resource management, the environment and sustainability of the resource base. The overall goals of this study are to:

- Outline the main changes in agriculture, food security and rural development, including non-farm rural income opportunities that have been associated with overall economic growth and document the main policies and strategies that led to them;
- Extrapolate these trends in the future and assess the implications for internal food security;
- Assess the implications of the overall rapid economic growth of China for sustainable food security, agriculture and rural development in other countries, particularly in Asia but with significant attention also to the greater Pacific Rim.

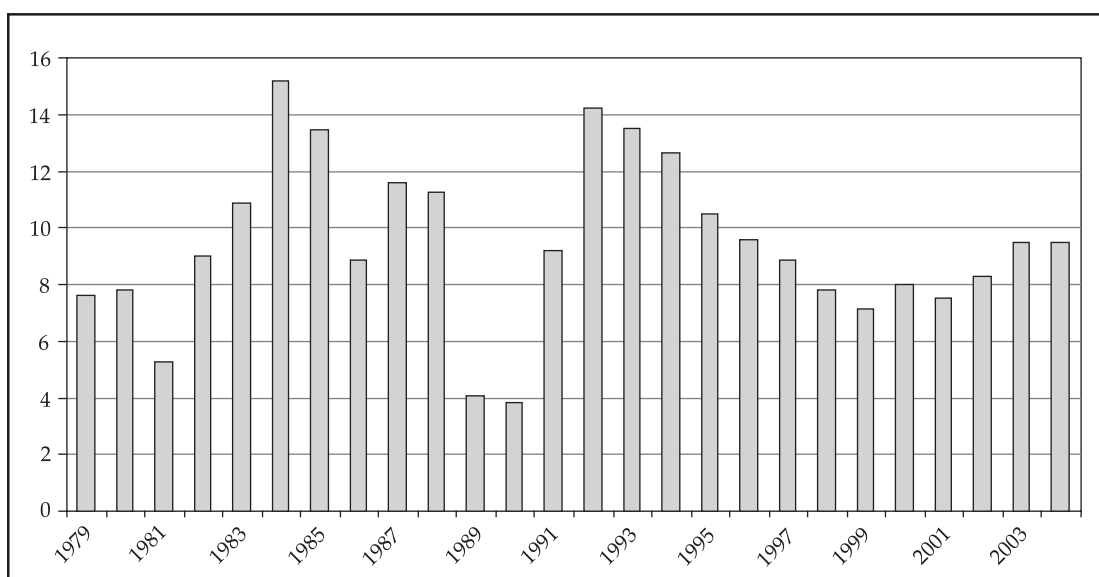
Section 2 provides an overview of China's economic performance and agricultural and rural development in the context of economic growth, particularly with regard to major internal adjustments, past and ongoing, to cope with changes. Key development policies, strategies and institutional changes that have been associated with economic development are also discussed. Section 3 discusses the prospects for China's economic growth in the future. The major issues covered in this section include the national development plan, key driving forces and constraints to economic growth and the economic growth prospectus. Section 4 assesses the implications of rising income and technological changes on domestic demand, supply and trade of major agricultural products in the future. Section 5 assesses rapid economic growth and its impacts on future demand, supply and trade of major agricultural products in the rest of the world, with analysis of opportunities and challenges it poses to other countries, particularly in the Pacific Rim. The final section concludes the study with policy implications on sustainable food security, agriculture, rural development and natural resource management for both China and other developing countries, particularly for those countries in the Asia-Pacific Rim. Methodology applied in the impact analysis, data improvement and alternative economic growth scenarios that are used in this study are provided in Appendix 1.

2. Retrospective of China's economy and agricultural and rural development

2.1 Overall economic growth

China's leaders have implemented various reform measures that have gradually liberalized the institutional and market structure of the economy. Although there is a cyclical pattern in China's growth rates (Figure 2), China's economy has outperformed almost all other countries in Asia and has had one of the fastest growth rates in the world since 1980 (World Bank 2002).

In the early reform period, annual growth rates of the GDP increased considerably from 4.9 percent from 1970 to 1978 to 8.8 percent from 1979 to 1984 (Table 1). High growth was recorded in all sectors. Institutional reform that transferred collective agricultural production to individual household production was the main source of agricultural growth in the early reform period (Lin 1992; Huang and Rozelle 1996). The growth of agriculture provided the foundation for the successful transformation of China's reform economy (Perkins 1994). In the meantime, rising income in the initial years of reform stimulated domestic demand, and the high savings rate also was appropriately transferred into physical capital investments in non-agricultural sectors in both rural and urban areas, which led to annual growth rates of 8.2 percent in industrial GDP and 11.6 percent in services (Table 1). During this same period, as family planning effectively lowered the nation's population growth rate, the high economic growth also implied high per capita GDP growth. The annual growth rate of



Source: NSBC (1990–2005).

Figure 2. Annual growth rate (%) of GDP, 1979–2004

Table 1. The annual growth rates (%) of China's economy, 1970–2004

	Pre-reform 1970–1978	Reform period			
		1979–1984	1985–1995	1996–2000	2001–2004
GDP	4.9	8.8	9.7	8.2	8.7
Agriculture	2.7	7.1	4.0	3.4	3.4
Industry	6.8	8.2	12.8	9.6	10.6
Services	Na	11.6	9.7	8.3	8.3
Foreign trade	20.5	14.3	15.2	9.8	25.8
Import	–	12.7	13.4	9.5	26.7
Export	–	15.9	17.2	10.1	25.0
Population	1.80	1.40	1.37	0.91	0.63
Per capita GDP	3.1	7.4	8.3	7.2	8.1

Note: Figure for the GDP (in real terms) from 1970 to 1978 is the growth rate of national income in real terms. Growth rates are computed using the regression method.

Source: NSBC, *Statistical yearbook of China*.

per capita GDP more than doubled between the pre-reform period, 1970–1978 (3.1 percent) and 1979–1984 (7.4 percent).

After reaching its peak growth in 1984 (15 percent), the pattern of rapid economic growth continued into the late 1980s (Figure 2) as economic reform had been gradually expanded from agricultural to non-agricultural sectors (Figure 2). In this period, instead of merely depending on urban sector expansion and reforming China's existing state-owned enterprises (SOEs), local leaders mobilized various resources (e.g. capital and labour) to develop rural township and village enterprises (TVEs). TVEs took off after the mid-1980s. In the meantime, management and incentive reforms and gradual structural changes in the urban economy, in response to demand changes under a more liberalized economy, also contributed to China's economic expansion. Capital formation as a percentage of the GDP increased from about 32 percent from 1981 to 1982 to more than 38 percent from 1985 to 1986 (NSBC 2004). In fact, growth might have been too fast in the first few years after the mid-1980s.

In the late 1980s, in response to an overheated economy and unprecedented inflation rates, China's leaders were forced to adopt a set of stringent contractional macroeconomic policies (Naughton 1995). As a consequence, after China experienced two years of high inflation, economic growth slowed sharply from 1989 to 1990. The annual growth rate of GDP from 1989 to 1990 was about 4 percent only, the lowest rate over the entire reform period. After the brief slowdown period, the government responded promptly and implemented a series of policy measures to increase both domestic private and public investments as well as FDI. Policies to restimulate the economy included providing a better market environment for private sector development, fiscal and financial expansion, the devaluation of the exchange rate, trade liberalization and the expansion of special economic zones and higher agricultural prices (World Bank 1997). The economy quickly rebounded and the annual growth rate of the GDP accelerated to 14 percent in 1992 and maintained rates of 10 to 13 percent in the mid-1990s (1993–1996 — Figure 2). When the economy was growing at its top speed during the mid-1990s, inflation rates rose again.

Because the economy was growing rapidly, inflation was high in the mid-1990s. In order to avoid a repeat of the economic slowdown that occurred in the late 1980s, China's leaders implemented a range of measures aimed at achieving a soft landing (Zhu and Brandt 2001). As before, financial and credit policies were tightened. Administrative controls over new investments also were implemented. To keep the economy from stagnating too much, leaders increased urban wages, invested heavily in rural and urban infrastructure in an attempt to counterbalance the contractional measures. The growth decelerated gradually, but unlike the late 1980s, it only slowed marginally. During the late 1990s, economic growth remained high, more than 8 percent annually (Table 1 and Figure 2).

It is worth noting that despite the Asian financial crisis, an average annual growth rate of 8.2 percent from 1996 to 2000, was still remarkable (Table 1). China was able to keep the crisis from spreading into its borders, in part as a consequence of the more insulated nature of its financial sector. In addition, since the size of its domestic capital market was so large, China was better able to weather the international financial crisis. During this time also, its growth rates were among the highest in the world (NSBC 2002).

Moreover, in contrast to the stagnation of growth in the rest of the world, China's economic growth has been accelerated since the beginning of the twenty-first century. Annual GDP growth rose from 7.3 percent in 2001 to 9.5 percent in both 2003 and 2004 (Figure 2), with average growth rate of 8.7 percent from 2001 to 2005 (Table 1). It is projected that the growth rate will reach more than 9 percent in 2005, which implies that the size of China's economy will be 11 times as large as that in 1978 when China started to reform its economy.

2.2 Structural changes in China's economy

2.2.1 Overall change in economic structure

Rapid economic growth has been accompanied by significant structural changes in China's economy. Whereas agriculture accounted for more than 40 percent of the GDP in 1970, it fell to 30 percent in 1980, 20 percent in 1995 and only 15 percent in 2004 (Table 2). After a period of peaks and troughs of industrial share in the national GDP from 1970 to 1985, the share gradually started to increase after the late 1980s, rising from 42 percent in 1990 to 53 percent in 2004. In contrast to agriculture, the service sector has expanded rapidly. The share of the service sector in the national GDP increased from 13 percent in 1970 to 21 percent in 1980 and 32 percent in 2004 (Table 1). This trend is expected to persist in the coming years as China will continue to promote its structural adjustment policies and economic reforms in response to domestic demand and external trade pattern changes in the coming years.

Table 2. Changes in structure (%) of China's economy, 1970–2004

	1970	1980	1985	1990	1995	2000	2004
Share in GDP							
Agriculture	40	30	28	27	20	16	15
Industry	46	49	43	42	49	50	53
Services	13	21	29	31	31	33	32
Share in employment							
Agriculture	81	69	62	60	52	50	47
Industry	10	18	21	21	23	22	22
Services	9	13	17	19	25	28	31
Trade to GDP ratio	Na	12	23	30	40	44	70
Export/GDP	Na	6	9	16	21	23	36
Import/GDP	Na	6	14	14	19	21	34
Share in export							
Primary products	Na	50	51	26	14	10	7
Foods	Na	17	14	11	7	5	3
Share in import							
Primary products	Na	35	13	19	18	21	21
Foods	Na	15	4	6	5	2	2
Share of rural population	83	81	76	74	71	64	58

Source: National Statistical Bureau, *China statistical yearbook*, various issues; and *China rural statistical yearbook*, various issues.

Structural changes in economy have also been substantial in employment patterns. The share of employment accounted for by the industrial sector doubled from 1970 to 1985 and has remained at about 20 to 23 percent thereafter (row 5, Table 2). Employment share in the service sector had risen even more rapidly from 9 percent in 1970 to 19 percent in 1990 and 31 percent in 2004. Agriculture employed more than 80 percent of the nation's total labour force in 1970, which declined significantly to 60 percent in 1990 and less than 50 percent (including part-time agricultural labour) after 2000 (row 4, Table 2).

In rural areas, more than 40 percent of the labour force was employed in the non-agricultural sector in the late 1990s (deBrauw *et al.* 2002). Expanding non-agricultural employment has contributed substantially to the growth of farm household income since the late 1980s (Rozelle 1996). Non-agricultural farm household income exceeded agricultural income in 2000 for the first time and the share rose to 52.4 percent in 2004 (NSBC 2005).

There are many factors that have simultaneously contributed to China's structural changes in terms of economic compositions and employment. Rapid economic growth, urbanization (Huang and Bouis 1996), market liberalization (Lardy 1995; Huang and Rozelle 1998) and China's open-door policies (Branstetter and Lardy 2005), among many others, have significant impacts on consumption and demand (both internal and external) patterns. These, together with the rapid development of factor and output markets, largely explain the changes in China's economic structure in the past two to three decades (Brandt *et al.* 2005; Sonntag *et al.* 2005).

2.2.2 Demographic changes

During the three decades after 1950, China experienced an extraordinary population growth. Daunting prospects of feeding an ever-increasing population triggered the Chinese Government to enforce drastic population planning measures. At present, China's economic growth goes hand in hand with

a rapid demographic transition process: Total fertility rates declined from 4.2 in the 1970s to below replacement level.

The factors fostering the fertility transition in China are largely attributable to the government's strict population policies and family planning programmes, as well as to profound socio-economic changes and massive urbanization trends. For the national total, the population increased from 552 million in 1950 to 830 million in 1970, which triggered China to start its family planning programmes. Since then the average annual growth rate of population has been falling from more than 2 percent from 1950 to 1970 to 1.8 percent from 1970 to 1978, and less than 1 percent after the late 1990s. By 2001 to 2004, the annual growth rate further fell to 0.63 percent only (Table 1).

After a long period of slow expansion of the urban economy, China's urbanization has started to take off. In contrast to rapid industrialization, due to urban-rural segmenting of institutional regulations, China's urbanization had proceeded rather slowly before 1980s. The rural population remained at about 81 to 83 percent in the 1970s (last row, Table 2). However, the process of urbanization has taken off and has been considered to have mighty potential for economic development since the mid-1990s. By 2004, the urban population accounted for 43 percent of the total population. It is anticipated that urbanization will accelerate in the next few decades thus making significant contributions to economic growth and further stimulating structural changes in China's economy.

2.2.3 More open economy

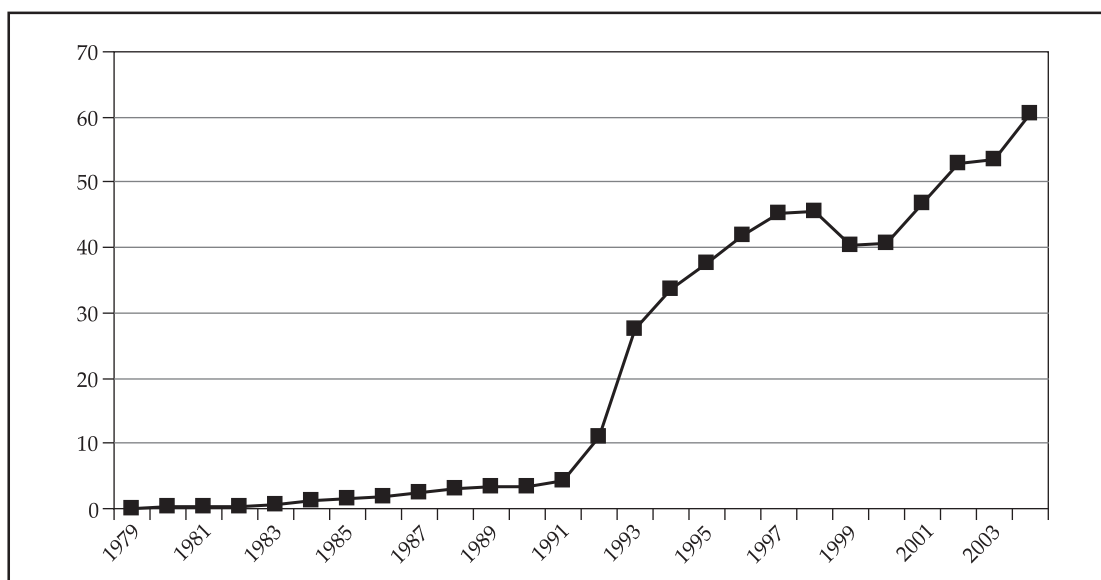
Rapid economic growth has also been associated with remarkable changes in China's international trade. Throughout the reform era, foreign trade has been expanding even more rapidly than the GDP. Annual growth rates of foreign trade reached nearly 15 percent in both the 1980s and the early 1990s (Table 1). China's foreign trade growth rate still grew at nearly 10 percent annually between 1996 and 2000 when the Asian and world economies were hit by the Asian economic crisis. After China's WTO accession, the growth of both imports and exports has been tremendous. The average annual growth rate of trade reached about 26 percent from 2001 to 2004 (Table 1).

With the rapid growth of China's external sector, foreign trade has been playing an increasing role in the national economy since the beginning of the reforms. China's export to GDP ratio increased from less than 6 percent in 1980 to 21 percent in 2001 and further to 36 percent in 2004 (row 8, Table 1). Over the same period, the import to GDP ratio also increased from 6 percent to 21 percent and 34 percent. These ratios indicate that China is ranked as one of the most open economies in the world.

China became the world's largest recipient of FDI in 2004. FDI inflows into China increased rapidly after 1979, and particularly since the early 1990s (Figure 3). It is worth noting that China has also begun to invest its capital overseas. China's FDI in other countries has increased significantly since the late 1990s though starting from a very low level. In 2003, China recorded US\$2.85 billion investment in the rest of the world, which nearly doubled to US\$5.5 billion in 2004.

The rapid expansion of China's external economy is largely explained by China's long-term development strategy to open its economy. Prior to economic reform, China adopted a highly centralized and planned foreign trade regime (Lardy 2001). Foreign trade rights were granted by the Ministry of Foreign Trade to only 12 SOEs or corporations with strictly state foreign trade plans. This system, however, has been substantially decentralized by granting more corporations or firms direct foreign trading rights. The number of trade firms rose to more than 2 200 in the initial period of reform (1980-1987, Huang and Chen 1999). By 2001 the government had granted trade rights to 35 000 firms, most being private trade corporations or production firms (Branstetter and Lardy 2005).

Significant reductions of export subsidy and import tariff have also occurred since the late 1980s. Because of the distorted domestic pricing system, the export subsidies were a common phenomenon



Source: NSBC (1990–2005).

Figure 3. Inward FDI in China (US\$ billion), 1979–2004

under the planned foreign trade regime. The first effort to curb the rising trend of the subsidy was initiated in 1987 when China fixed its export subsidy for 1988 to 1990 to a level equal to about 4 percent of the total export value. By 1991, all export subsidies were phased out though China occasionally applied them for specific products (e.g. maize and cotton) to avoid a large fall of domestic prices before China's WTO accession (Huang *et al.* 2004). Reduction of import tariff has also been remarkable. China's average tariff was as high as 56 percent in the early 1980s, which was gradually reduced to 47 percent in 1991, 23 percent in 1996 and about 15 percent on the eve of WTO accession in 2001. Within the agriculture sector, significant reduction of import protection has also occurred. The simple average agricultural import tariff fell from 42.2 percent in 1992 to 23.6 percent in 1998 to 21 percent in 2001 (MOFTEC 2002).

China's openness to imports has progressed even faster than the decline in formal trade barriers might indicate. This is due to many special privileges that the government has extended to firms involved in export processing and strategic important commodity imports to balance domestic shortage. Thus, actual tariff revenues have been far below the average formal tariff rates. For example, the tariff revenues as a percentage of total import values was about 17 percent in the mid-1980s and only slightly more than 2 percent in 2004 (Lardy 2001; Branstetter and Lardy 2005).

Exchange rate policy has also changed significantly toward a market-oriented environment. Historically, the overvaluation of domestic currency for trade protection purposes reduced exportable incentives. Real exchange rates remained constant and even appreciated during the 30 years prior to reforms, but depreciated rapidly after reforms. From 1978 to 1994, the real exchange rate depreciated more than 400 percent. China also unified its two-tier foreign exchange rate systems (official exchange rate and swap rate) and the RMB has become convertible on the current account since 1996. Falling exchange rates increased export competitiveness and so have contributed to China's phenomenal export growth record. Following a modest appreciation, the exchange rate was effectively fixed at RMB8.3 to the United States dollar in 1995. In 2005, China appreciated the RMB by about 2.5 percent (RMB to dollar changed from 8.3 to 8.1); in the meantime China has also initiated a more market-oriented reform on its exchange rate policy.

China's policies on FDI have also changed noticeably since the beginning of its economic reform. For historical and ideological reasons, FDI in China was highly restricted prior to 1978. Since the

passing of the Equity Joint Venture Law in late 1979, China has gradually liberalized its FDI regime, and the institutional framework has been developed to regulate and facilitate such investments. The liberalization of the FDI regime and the improved investment environment greatly increased the confidence of foreign investors in China. The changes in FDI policies and the increasing size of China's market have contributed to the rapid expansion of China's FDI inflows.

2.3 Agricultural and rural development

2.3.1 Agricultural production growth

The growth of agricultural production in China since the 1950s has been one of the main accomplishments of the country's development and national food security policies. Except during the famine years of the late 1950s and early 1960s, the country has enjoyed rates of production growth that have outpaced the rise in population.

After 1978, decollectivization, price increases and the relaxation of trade restrictions on most agricultural products accompanied the take off of China's food economy. Between 1978 and 1984, grain production increased by 4.7 percent per year; the output of fruit rose by 7.2 percent (Table 3). The highest annual growth rates came in the oilseed, livestock and aquatic product sectors, sectors that expanded in real value terms by 14.9, 9.1 and 7.9 percent, respectively.

Agricultural growth remained remarkable for most agricultural products from 1985 to 2000. Fishery production experienced the fastest growth from 1985 to 1995 (13.7 percent annual growth, Table 3). Although its annual growth rate fell in the following period, it still recorded 10.2 percent between 1996 and 2000. Over the same period, meat production and vegetable-sown areas expanded from 7 to 9 percent annually. Other cash crops such as oil crops, soybean and fruits also grew at rates much higher than population growth.

Overall growth of the agriculture sector remained at the annual rate of 3.4 percent from 2001 to 2004 and 1996 to 2000. Comparing the growth rates of individual commodities between these two periods, it appears that production (measured in quantity) growth of many individual agricultural

Table 3. The annual growth rates (%) of the agricultural economy, 1970–2004

	Pre-reform 1970–1978	Reform period			
		1979–1984	1985–1995	1996–2000	2001–2004
Agricultural GDP	2.7	7.1	4.0	3.4	3.4
Production:					
Grain	2.8	4.7	1.7	0.03	-0.2
Cotton	-0.4	19.3	-0.3	-1.9	6.5
Soybean	-2.3	5.2	2.8	2.6	2.4
Oil crops	2.1	14.9	4.4	5.6	0.6
Fruit	6.6	7.2	12.7	8.6	29.5
Meat	4.4	9.1	8.8	6.5	4.6
Fishery	5.0	7.9	13.7	10.2	3.5
Planted area:					
Vegetables	2.4	5.4	6.8	6.8	3.8
Orchards (fruit)	8.1	4.5	10.4	1.5	2.2

Note: Growth rates are computed using the regression method. Growth rates of individual and groups of commodities are based on production data.

Sources: NSBC (1985–2005) and MOA (1985–2005).

commodities fell, which may indicate that China's agricultural production has been shifting from aggregate production to value-added and quality food production.

2.3.2 Structural changes in agricultural production

China's agriculture has undergone significant changes since the early 1980s. Rapid economic growth, urbanization and market development are key factors underlining the changes. Rising income and urban expansion have boosted the demand for meat, fruit and other non-staple foods. These changes have stimulated sharp shifts in the structure of agriculture (Huang and Bouis 1996; Huang and Rozelle 1998). For example, the share of livestock output value rose 2.5 times from 14 percent to 35 percent between 1970 and 2004 (Table 4). Aquatic products increased at an even more rapid rate. One of the most significant signs of structural changes in the agriculture sector is that the share of crops in total agricultural output fell from 82 percent in 1970 to 51 percent in 2004.

Table 4. Changes in structure (%) of China's agricultural economy, 1970–2004

	1970	1980	1985	1990	1995	2000	2004
Share in agricultural output							
Crops	82	76	69	65	58	56	51
Livestock	14	18	22	26	30	30	35
Fishery	2	2	3	5	8	11	10
Forestry	2	4	5	4	3	4	4

Source: NSBC, *China's statistical yearbook*, various issues and *China rural statistical yearbook*, various issues.

Within the crop sector, the importance of the three major crops, rice, wheat and maize, has waxed and waned. The share of the major cereal grains increased from 50 percent in 1970 to a peak level of 57 percent in 1990 and then gradually declined to less than 50 percent in 2004 (Table 5). Most of the fall has been due to diminishing rice- and wheat-sown areas. In contrast, the shares of maize areas grew by more than 50 percent between 1970 and 2000 (Table 5). The rise in maize area, China's main feed grain, is correlated in no small way with the rapid expansion of the nation's livestock production during the same period.

Table 5. Shares of crop-sown areas, 1970–2004

	1970	1980	1985	1990	1995	2000	2004
Rice	22.1	23.1	21.9	22.3	20.5	19.2	18.5
Wheat	17.4	19.7	20.0	20.7	19.3	17.1	14.1
Maize	10.8	13.7	12.1	14.4	15.2	14.8	16.6
Soybean	5.5	4.9	5.3	5.1	5.4	6.0	6.2
Sweet potato	5.9	5.1	4.2	4.2	4.1	3.7	3.2
Cotton	3.4	3.4	3.5	3.8	3.6	2.6	3.7
Rapeseed	1.0	1.9	3.1	3.7	4.6	4.8	4.7
Peanut	1.2	1.6	2.3	2.0	2.5	3.1	3.1
Sugar crops	0.4	0.6	1.0	1.2	1.3	1.0	1.0
Tobacco	0.2	0.3	0.9	0.9	0.9	0.8	0.8
Vegetables	2.0	2.2	3.2	4.3	6.3	9.7	11.4
Others	30.1	23.5	22.5	17.4	16.3	17.2	16.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: NSBC, *China's statistical yearbook*, various issues; *China rural statistical yearbook*, various issues.

In addition to maize, other cash crops such as vegetables, edible oil crops, sugar crops and tobacco have expanded in area. In the 1970s, vegetables accounted for only about 2 percent of total crop area; by 2004, the share had increased by nearly six times (Table 5). The area devoted to edible oil also grew by two to three times. Field interviews reveal that the livelihood of the poor relies more on crops than livestock and fishery (when compared to richer farmers). Within the crop sector, poorer farmers produce more grains (particularly maize) than cash crops. These figures might imply that the poor have gained somewhat less than better off farmers from the diversification of agricultural production during the reform period.

2.3.3 Sources of production growth

Past studies have already demonstrated that there are a number of factors that have simultaneously contributed to agricultural production growth during the reform period. The earliest empirical efforts focused on measuring the contribution of the implementation of the household responsibility system (McMillan *et al.* 1989; Fan 1991; Lin 1992). These studies concluded that most of the rise in productivity in the early reform years was a result of institutional innovations, particularly the HRS (see Box 1), a policy that gave individual farmers control and income rights in agriculture.

Box 1. Land law in China

China initiated the Household Responsibility System (HRS) in 1979, which radically altered the organization of production in agriculture and the incentives facing rural households. By 1984, about 99 percent of agricultural land was contracted to all individual households, mostly on the basis of family size and the number of people in the household's labour force. At its conclusion, average farm size was about 0.6 ha. The size of farms varies among regions, ranging from more than 1 ha in Northeast and nearly 1 ha in North China to about 0.5 ha in Southwest and 0.2 to 0.3 ha in South China. Because the multiple cropping index (the number of crop seasons planted per year on a single plot of land) increases from one in the Northeast to two to three crops in South China, variations in sown area among China's regions are less than those of farm size. With the extension of land-use rights and residual income rights to households, agricultural production shifted from a collective-based to a family-based farming system. Land was not privatized, however. The ownership of land remained collective.

China's land rights are complicated and have been changing since its reform. The first term of the land-use right contract was stipulated for 15 years. The effects of such a land policy on the equitable distribution of land to farmers and its effect on food security and poverty alleviation have been obvious and well-documented. The land policy also has contributed greatly to efficiency. Specifically, the income and control rights contributed significantly to agricultural production and productivity growth in the early 1980s (Lin 1992; Huang and Rozelle 1996).

Although local leaders were supposed to have given farmers land for 15 years in the early 1980s and 30 years, starting in the late 1990s, collective ownership of land has resulted in frequent reallocation of village land. Many people have been concerned that such moves by local leaders could result in insecure tenure and negative effects on investment (Brandt *et al.* 2002). Many authors have shown, however, that in fact there has been little effect on either short- or long-term land productivity. There is still concern among officials that collective ownership and weak alienation and transfer rights could have other effects, such as impacts on migration and rural credit (Johnson 1995). As a result, China has recently passed a new land law, the Rural Land Contract Law (effective after March 1, 2003), which seeks to greatly increase tenure security.

Above all, the government has been searching for a mechanism that permits those that stay in farming to be able to gain access to additional cultivated land and increase their incomes and competitiveness. Even without much legal protection, researchers are finding increasingly more land is rented in and out (Deininger *et al.* 2005). In order to accelerate this process, the new Land Contract Law further clarifies the rights for transfer and exchange of contracted land. The new legislation also allows family members to inherit the land during the contracted period. The goal of this new set of policies is to encourage farmers to use their land more efficiently and increase their farm size.

More recent studies show that since the HRS was completed in 1984, technological change has been the primary engine of agricultural growth (Huang and Rozelle 1996; Fan 1997; Fan and Pardey 1997; Huang *et al.* 1999; Jin *et al.* 2002; also, see Box 2). Improvements in technology have by far contributed the largest share of crop production growth even during the early reform period. The results of these studies show that further reforms outside of decollectivization also have high potential for affecting agricultural growth. Price policy has been shown to have had a sharp influence on the growth (and deceleration) of both grain and cash crops during the postreform period. Favourable output to input price ratios contributed to the rapid growth in the early 1980s. However, this new market force is a two-edged sword. A deteriorating price ratio caused by slowly increasing output prices in the face of sharply rising input prices was an important factor behind the slowdown in agricultural production in the late 1980s and early 1990s. The higher opportunity cost of land has also held back the growth of grain output throughout the period, and that of cash crops since 1985.

Irrigation has played a critical role in establishing the highly productive agronomic systems in China (Wang 2000). The proportion of cultivated area under irrigation increased from 18 percent in 1952 to a level at which about half of all cultivated land had been irrigated after the early 1990s (NSBC 2001). However, rising demand for domestic and industrial water uses poses a serious constraint to irrigated agriculture and increasing water scarcity is being viewed as a major challenge to future food security and the well-being of people especially in the northern region. Wang *et al.*

Box 2. Agricultural productivity and technology in China

After the 1960s, China's research institutions grew rapidly, from almost none in the 1950s, to a system that now produces a steady flow of new varieties and other technologies. China's farmers used semi-dwarf varieties several years before the release of Green Revolution technology elsewhere. China was the first country to develop and extend the production of hybrid rice. Chinese-bred conventional rice varieties, wheat and sweet potatoes were comparable to the best in the world in the prereform era. China's TFP rose at a healthy rate of about 2 percent per year during the reform era (Jin *et al.* 2002). According to the work of Jin *et al.* (2002), technology is the most important source of TFP growth. Despite the breakdown of the extension system during the reform era, farmers continued to adopt new varieties produced by researchers. During the 1980s and 1990s China's producers were replacing varieties from about 20 to 25 percent of their sown areas during each cropping season. In other words, about every four to five years, China's farmers are completely turning over their technology portfolios.

In addition to the development of conventional agricultural technology, scientists and researchers have a strong commitment to plant biotechnology. A new source of plant biotechnology discoveries is emerging in China (Huang *et al.* 2002b; 2005a). Public investment in agricultural biotechnology has increased significantly since the mid-1980s. In 2003, the agricultural biotechnology research budget reached RMB1.6 billion (about US\$200 million at the official exchange rate or more than US\$800 million in PPP terms). Expenditures of this level demonstrate the seriousness of China's commitment to modern technology.

However, China's agricultural R&D system is also facing great challenges. Agricultural research in China is organized by the government. A nationwide reform in research was launched in the mid-1980s and accelerated after the late 1990s. The reforms attempted to increase research productivity by shifting funding from institutional support to competitive grants, supporting research useful for economic development and encouraging applied research institutes to support themselves by selling the technology they produce. Today, the record on the reform of the agricultural technology system is mixed. Empirical evidence demonstrates the declining effectiveness of China's agricultural research capabilities (Jin *et al.* 2002). Recognizing these challenges, China is now revisiting its reforms and formulating a new strategy aimed at re-establishing a more innovative agricultural technology system (for both research and extension) for sustainable agricultural growth.

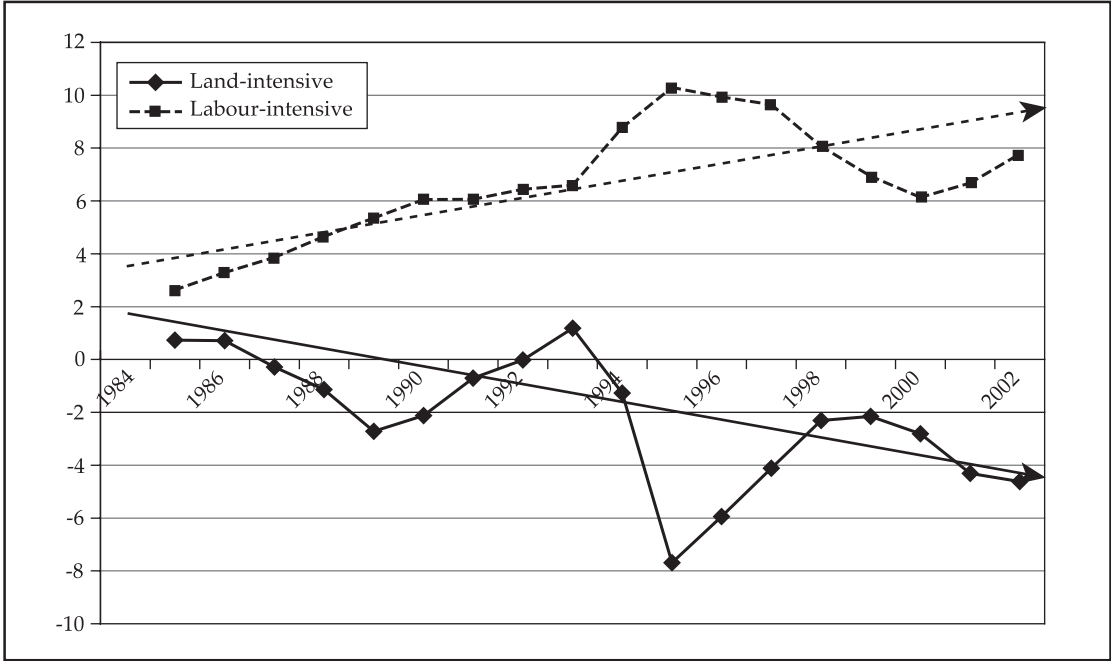
(2005) showed that the water management reform has been helping to increase the efficiency of water use in North China, although the scope for such reform in the long term is somewhat limited.

2.3.4 Agricultural trade performance

While agricultural production was growing quickly, agricultural trade was growing even more so. Agricultural trade (both imports and exports) nearly tripled from 1980 to 1995 (Table 6). During this time, exports rose faster than imports. Since the early 1980s, China has been a net food exporter.

In the same way that trade liberalization has affected growth in the domestic economy (Lardy 2001), changes in the external economy have affected the nature of China’s trade patterns (Huang and Chen 1999). As trade expanded, despite the overall positive growth of agricultural trade, the share of agriculture in total trade fell sharply because the growth of non-agricultural trade was much higher than that of agricultural trade. For example, the share of food exports (imports) in trade declined from 17 percent (15 percent) in 1980 to 3 percent (2 percent) only in 2004 (Table 2).

Disaggregated, product-specific trade trends show equally sharp shifts. This suggest that exports and imports are moving increasingly in a direction that is consistent with China’s comparative advantages (Figure 4). In general, the net exports of land-intensive bulk commodities, such as grains, oilseed and sugar crops, have fallen reflecting the increase in imports. At the same time, exports of higher-valued, more labour-intensive products, such as horticultural and animal (including aquaculture) products have risen. Grain exports, accounted for nearly one-third of food exports in the mid-1980s. After the late 1990s, horticultural, animal and aquatic products accounted for about 70 to 80 percent of food exports (Huang and Chen 1999; Table 6).



Source: Huang, et al. (2005).

Figure 4. Agricultural trade balance (net export) by land-intensive and labour-intensive products, US\$ million

Table 6. Structure of China's food and feed trade (US\$ million), 1980–2002

	1980	1985	1990	1995	2000	2001	2002
Exports:							
Live animals and meat	745	752	1 221	1 822	1 628	1 976	1 008
Dairy products	71	57	55	61	188	192	194
Fish	380	283	1 370	2 875	3 705	4 231	4 690
Grains, oils and oilseed	481	1 306	1 237	1 608	2 667	1 835	2 422
Horticulture	1 074	1 260	2 293	3 922	4 367	4 931	6 402
Sugar	221	79	317	321	173	156	227
Sum of above foods	2 972	3 737	6 493	10 609	12 728	13 340	14 943
Imports:							
Live animals and meat	6	24	68	115	696	659	706
Dairy products	5	31	81	60	218	219	274
Fish	13	44	102	609	1 212	1 319	1 558
Grains, oils and oilseed	2 472	1 065	2 535	6 760	4 163	5 343	5 825
Horticulture	104	92	113	259	677	866	838
Sugar	316	274	390	935	177	376	238
Sum of above foods	2 916	1 530	3 289	8 736	7 143	8 782	9 439
Net exports:							
Live animals and meat	739	728	1 153	1 707	932	1 317	302
Dairy products	66	26	-26	1	-30	-27	-80
Fish	367	239	1 268	2 266	2 493	2 912	3 132
Grains, oils and oilseed	-1 991	241	-1 298	-5 152	-1 496	-3 490	-3 403
Horticulture	970	1 168	2 180	3 663	3 690	4 065	5 564
Sugar	-95	-195	-73	-614	-4	-220	-11
Sum of above foods	56	2 207	3 204	1 873	5 585	4 558	5 504

Sources: Data for 1980–1995 are from Mathews (2002), based on UN COMTRADE statistics; data after 1995 are from various publications of China's National Statistical Bureau and China's Custom Authority.

2.3.5 Food security

Food security at the macronational level implies that adequate supplies of food are available through domestic production and/or through imports to meet the consumption needs of the country's population. China has experienced substantial increased per capita food consumption over the last three decades. Per capita food availability rose from 1 717 kcal per day in the early 1960s to 2 328 kcal between 1979 and 1981 (Table 7). By the late 1990s, per capita food availability had reached more than 3 000 kcal per day, a level that approaches that achieved in most developed countries. Hence it is clear that by the early reform period, China's food availability far exceeded the United States' minimum daily requirement of 2 100 kcal (WHO standard). Given China's status as a net food exporter, when examining the rise in domestic food availability, it is clear that the increase was almost exclusively achieved through increases in domestic production.

During the same period (between the 1960s and late 1990s), other indicators of nutrition also improved. For example, protein intake and fat consumption measures on a per capita per day basis increased significantly. Protein intake rose from 45 to 84 grams. Fat consumption increased from 17 to 82 grams. Table 7 also shows evidence that most of the improvement in the quality of China's diet was achieved after 1980. In the early 1960s, nearly 96 percent of calories came from grains and other non-livestock products. By the 1990s, the reliance on non-meat food products was reduced to about 81 percent. During the same period, the share of calories contributed by animal products rose from 4 to 19 percent (Table 7). Similar trends during the past four decades can be traced out for the changing sources of protein and fats.

Table 7. Per capita supply and sources of calories, protein and fat per day in China, 1961–2000

	1961–1963	1969–1971	1979–1981	1989–1991	1998–2000
Supply					
Calories	1 716.7	1 993.3	2 328.0	2 683.3	3 033.0
Protein (grams)	44.8	47.5	54.5	65.0	84.3
Fat (grams)	16.8	23.5	32.5	53.0	81.9
Sources (%)					
Calories					
– Vegetable products	95.9	94.1	92.6	88.4	81.3
– Animal products	4.1	5.9	7.4	11.6	18.7
Protein					
– Vegetable products	90.5	87.9	86.4	77.7	65.6
– Animal products	9.5	12.1	13.6	22.3	34.4
Fat					
– Vegetable products	66.1	56.8	53.4	49.0	41.4
– Animal products	33.9	43.2	46.6	51.0	58.6

Source: FAO database.

At the microlevel, household or individual food security depends on a number of factors. These are related, for the most part, to various forms of entitlements to income and food-producing assets. Also important are the links between domestic and external markets and the access of small, low-income and resource-poor producers and consumers to external markets.

Access to food in rural China has changed over time. In the early years of the reform, decollectivization policies gave all farm households in China a parcel of land. During this time, however, markets did not function well (deBrauw *et al.* 2004). As a result, most farmers produced mostly for their own subsistence. Access to food was primarily through the land that was allocated to farmers by the state.

As China has changed, so has the food economy and nowhere has the change been more noticeable than in access to food. From an economy that was mostly subsistence, in recent years China has one of the most commercialized rural economies when compared to other developing economies. On the average, the shares of marketed products in total production ranged from 54 percent for grain to more than 90 percent for fish (Huang *et al.* 2003b). Even the poorest of the poor also marketed nearly all products they produced, though the rate of commercialization is less than that of the richer Chinese farmers who have also increasingly purchased their food from the rural market.

Although China's rural consumers still face a number of uncertainties in access to food, these differ from other countries. In other countries, production risk is often thought to be one of the most important sources of risk that will affect rural residents. In China this is less likely. While China's farmers also face production risks, these may be less important relative to other nations. A much higher share of China's land (nearly 50 percent) is irrigated (NSBC 2001). A higher share of households (around 80 percent) is diversified by having at least one family member in the off-farm market (deBrauw *et al.* 2004). Giles (2000) shows that risks in China come from a number of non-traditional sources, such as wage and policy risks. With an increasing number of households relying on markets to procure their food, households also face rising market price risks.

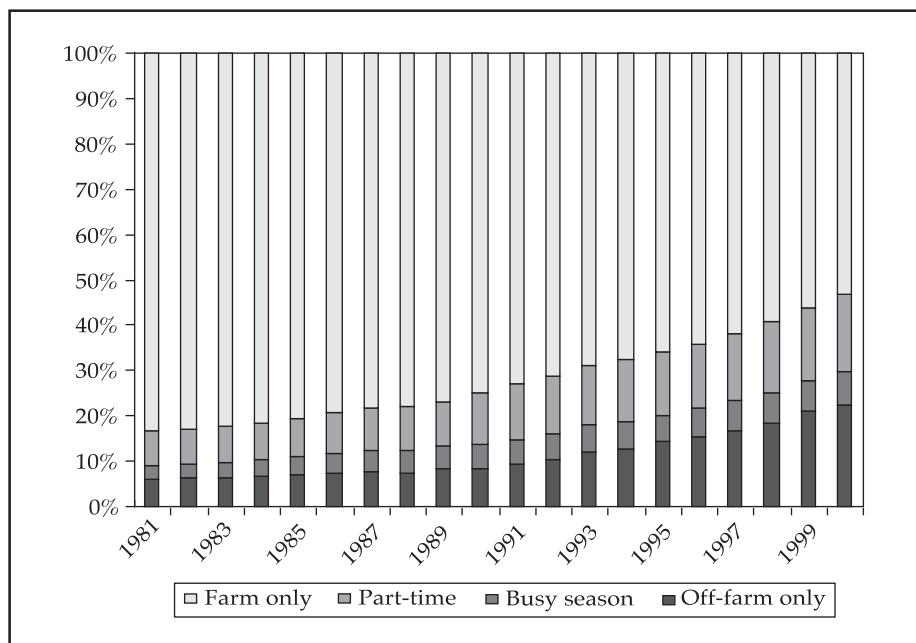
Stability of food supplies and access to food by the poor are the other dimensions of food security. In this regard, the government has developed its own disaster relief programme. It also runs a national food-for-work scheme, although this is less for disaster relief and more for long-term investments. The nation's capacity to deal with emergencies has been demonstrated repeatedly during the reform

period. For example, the government responded massively and in a timely fashion during the floods in 1990s. Through these reactions, China's government has proved that its capacity to deal with the consequences of natural disasters is adequate. During the 1980s and early 1990s, one of the major constraints that affected the stabilization of food supply in China was the poor marketing and transportation infrastructure (Nyberg and Rozelle 1999).

2.3.6 Off-farm employment

China's rural enterprises provide employment for millions of rural labourers who have been transferred out of the agriculture sector as agricultural productivity increases. Without the rapid growth of this sector in China, a huge employment problem would have been created in the past. Among different periods of rural enterprise development, township and TVE development before the late 1990s was unique and played a vital role in facilitating China's economic growth and increasing farmers' income (Box 3).

Off-farm work has emerged as the main source of income growth for rural households since the mid-1980s. By 2003 about half of China's rural labour force earned at least part of its income from off-farm jobs; more than 85 percent of households had at least one person working off-farm (Figure 5). Internal migration has become the most common way for rural labourers to get a off-farm job. More than 100 million migrants now reside and work away from their home villages. More than 75 percent of 16 to 20 year olds work off-farm in cities far removed from their homes. A veritable flood of young and relatively well-educated workers has been flowing towards China's cities and into industrial and service sector jobs in recent years. Self-employment opportunities in the rural economy also have risen rapidly during the past two decades, and the quality of these microenterprises has steadily improved. The firms, although household-based and extremely labour-intensive, provide employment for more than 80 million rural residents in more than 50 million households (Zhang *et al.* 2005).



Source: Zhang, *et al.* (2005).

Figure 5. Level of participation in farming and non-farming activities, 1980–2000

Box 3. Rural enterprise development in China

China's experience with rural enterprises (REs) shows the importance of expanding non-agricultural sectors in the path of overall economic development. REs' share in the GDP increased from about 3 percent in 1970s to nearly 30 percent by the late 1990s. REs have also dominated the export sector since the mid-1990s and employed about one-third of rural labour.

Several factors assisted the growth of REs before the early 1980s. Putterman (1997) provided five major explanations for rural industrial growth in China's prereform economy: Abundant rural unskilled labour, the availability of rural skilled labour from returned urban-retired workers, initial capital accumulation by local brigades and communes for RE investment, rising demand for industrial products that were neglected by the state because of its imbalanced emphasis on heavy industry and entrepreneurial talents of the local brigade and commune leaders.

With the rise of non-township- and non-village-owned enterprises (e.g. private and cooperative enterprises) since the mid-1980s, the term township and village enterprise (TVE) was expanded to cover private, cooperative and other forms of enterprises in rural areas (but excluding SOEs located in rural areas). The annual growth rate of TVE output value in real terms was recorded at more than 24 percent from 1984 to 1995 (NSBC 1997). Total employment in the TVE sector rose from 52.1 million in 1984 to 128.6 million in 1995, with an annual increase of about 7 million. By 1995, the gross output value of REs accounted for 75 percent of the rural output and 50 percent of national industrial output (NSBC 1997).

Several policies have contributed to the rapid growth of TVEs since the mid-1980s. Otsuka *et al.* (1998) showed that a large difference in efficiency between REs and public ownership (SOE) contributed to the significant growth of TVEs in the 1980s and early 1990s. Within the TVE sector, the recognition of private (individual and cooperative) enterprises by the central government beginning in 1984 had also become a new engine of TVE growth in the late 1980s and 1990s. Before the 1980s, almost all rural enterprises or TVEs were operated under the leadership of local townships and village. The number of privately owned and cooperative enterprises reached 20.4 million in 1995, which accounted for 53 percent of total RE employment (NSBC 1997). Increasing rural saving was the other important source of RE development. Rural industrialization also benefited from trade liberalization, currency devaluation (a devaluation of over 300 percent in real terms from 1984 to 1994) and favourable FDI policies. REs became more export-oriented. Their export share in total exports increased from less than 5 percent in the early 1980s to 43 percent by 1995.

However, RE expansion reached a turning point in 1997 when overall employment recorded a decline for the first time. A World Bank study (1999) shows that it will be difficult for REs to maintain past growth momentum because the environment has fundamentally changed. The initial conditions that favoured the rapid development of rural industries no longer prevail. In the early years of RE growth, China was supply-constrained. Most consumer and industrial goods were in short supply. With the emergence of REs, product competition grew and the larger profits of previous years disappeared. As the size of rural industry expanded, the extent of government support in terms of state financial aid, credits and tax reduction was limited. Financial markets could not meet their current needs. REs also faced considerable challenges in updating technology, expanding scale and environmental pollution. Despite significant changes in institutional and management forms in the RE sector, the property rights and operational and management systems were still far from efficient. Recognizing some of the above problems, China has implemented ambitious TVE property rights reforms since the mid-1990s. Nearly all collectively owned REs have been privatized since then. With improving credit access and increasing FDI, the growth of REs resumed recently.

The shift of the rural population off the farm into wage-earning jobs and self-employment has generated large increases in productivity and has contributed to most of the increase in rural incomes since the mid-1980s. Large increases in productivity come from shifting low productivity workers from farms into higher productivity manufacturing and service sectors. Between the mid-1980s and in recent years, average per capita rural household income rose by 4 to 5 percent per year, almost all of it from the off-farm sector. However, Zhang *et al.* (2005) show that the poorest farmers gain least from off-farm employment and are still highly dependent on agricultural income.

2.3.7 The impacts of economic and agricultural growth on poverty

China's success in poverty reduction is well-recognized internationally. The poverty rate has fallen from more than 30 percent to less than 3 percent of the total rural population (Figure 1 and Appendix Table 1). Understanding the determinants of success in poverty alleviation in poor rural areas is important beyond its academic interest for several reasons. First, there are still nearly 30 million rural people living below the nation's poverty line and a much large number when the international standard of poverty line is adopted (Figure 1). Second, the pace of rural poverty reduction has slowed down significantly since the late 1990s as poverty levels decline. Last but not least, there could be important policy implications not only for China but also for other developing countries in their efforts to reduce poverty.

Previous studies in China have mainly focused on the impacts of the nation's poverty alleviation programmes and poverty investment policies. The effectiveness of targeting poverty and the impacts of the poverty alleviation programmes on the income of the poor are key issues that have been widely addressed in the literature (World Bank 1992; Park *et al.* 1996; Rozelle *et al.* 1998). However, the impacts of overall economic and agricultural growth and trade liberalizations on poverty have been largely overlooked. One exception is a recent study on the determinants of poverty reduction in rural China (Huang *et al.* 2005b).

Huang *et al.* (2005b) provide several interesting results on key factors that have determined the changes of rural poverty in China. First, their results show that the overall economic growth (measured by per capita GDP) has been a primary source of rural poverty reduction in China. The average elasticity of poverty incidence with respect to per capita GDP was estimated to be -0.7 from 1985 to 2002, which implies that a 1 percent increase of per capita GDP has led to a 0.7 percent decline in rural poverty incidence.

Second, economic growth is an essential and necessary condition for nationwide poverty reduction, but not a sufficient condition. The estimated elasticities of poverty incidence with respect to economic growth decline significantly with economic growth. Their decomposition analysis shows that economic growth played a dominant role in reducing poverty in the 1980s. However, as income grew, the impact and effectiveness of general economic growth on poverty reduction has weakened considerably since the mid-1990s.

Third, agricultural growth, not just overall economic growth, matters for poverty reduction. For example, higher agricultural growth is statistically significantly associated with a lower poverty incidence rate over time and across provinces. Given the same growth of GDP, a 1 percent increase of agricultural share in the GDP will lead to a nearly 1 percent drop in the poverty incidence rate (Huang *et al.* 2005b). This should not be a surprising result as agriculture is the main source of income of the poor. The result also suggests the importance of government investment in agriculture and rural infrastructure on poverty reduction.

Fourth, the division of rural and urban development has significant adverse effects on rural poverty reduction. A widened urban-rural income gap has affected poverty reduction not only directly but also indirectly through its impact on overall economic growth. This result confirms our expectation that a larger urban-rural income gap is associated with higher poverty incidence. In this regard, the growth has to be made more broadly based than in the past.

Fifth, the growth of the non-state industrial sector and the development of TVEs have also contributed to China's rural poverty reduction indirectly through their effects on overall economic growth.

Last but not least, while trade liberalization benefits the Chinese economy as a whole (including the agriculture sector), policy-makers should be concerned about poverty and equity effects. Trade liberalization may enlarge both inter- and intra-regional income disparities, though the impacts are small than other factors examined by Huang *et al.* (2005b). Pro-poor policies must be adopted to target those who are vulnerable during the course of trade liberalization.

2.3.8 The main challenges for China's agricultural and rural development

While the progress in agricultural and rural development has been notable, there are also many lessons and major challenges ahead. With the transition from a planned to a market-oriented rural economy mostly complete, China's main challenge has shifted to broader development issues. In the coming years, the development process will have to be fundamentally different from the efforts in previous times when meeting the nation's food needs, poverty reduction and economic growth were the main goals.

China's rapid economic growth and the rise in the nation's overall wealth have been accompanied by widening income inequality. Regional income disparity has been expanding since the 1980s (Cai *et al.* 2002; World Bank 2002). Eastern China has grown faster than Central and Western China. The rural reforms increased rural incomes at a faster pace than urban incomes during the early 1980s. This led to a decline of the urban to rural income ratio from 2.57 in 1978 to 1.86 in 1985. However, after the one-time impact of the rural institutional reforms was exhausted, urban income growth has been consistently higher than that of the rural sector. By 2004, per capita income in the urban areas was 3.21 times that in the rural areas (NSBC 2005). Rising income disparity within the rural areas has also emerged. For example, the Gini coefficients in rural areas increased from 0.24 in 1980 to 0.31 in 1990 and to 0.37 in 2003 (NSBC-Rural Survey Department 2004).

While successful technology innovations will help China to increase its agricultural productivity, China may face a great challenge in coming to grips with water scarcity. Water shortages and increasing competition from industry and domestic use do not provide much hope for large gains in the areas under irrigation and the total output from irrigation expansion (Lohmar *et al.* 2003). This is particularly important in the North China Plain where most of China's wheat and to some extent maize, are produced.

While the land policy helped China to increase agricultural productivity in the early reform period and contributed significantly to reduction of China's rural poverty, landholdings are so small that farming activities alone cannot continue to raise the incomes of most rural households. The challenge is how China can effectively establish linkages between rural and urban areas and encourage the large labour shift out of agriculture.

Trends in environmental degradation suggest that there may be considerable stress on the agricultural land base. While judicious use of modern technologies is essential for efficient food production globally, inappropriate uses, such as excessive application rates or imbalances in input combinations, result in serious environmental problems and food safety concerns. China is now the world's leader in both chemical fertilizer and pesticide consumption. In the past 30 years, while world total nitrogen fertilizer application increased by seven times, China's nitrogen use in crop production increased by 45 times (Sonntag *et al.* 2005). On average, nitrogen use per hectare is about three times higher than the world average. Pesticides have been used on a large scale since the 1960s to protect crops from damage inflicted by insects and diseases (Huang *et al.* 2000). Recently, China surpassed Japan as the world's leading pesticide consumer. Intensive fertilizer and pesticide use can have several adverse effects and concerns about contamination of farm produce and endangering of the agro-ecosystem as well as human health are rising. Environmental stresses have also been occurring such as soil

erosion, salinization, the loss of cultivated land and decline in land quality (Huang and Rozelle 1995). Deng *et al.* (2005) show that although China did not record a decline in total cultivated land from the late 1980s to the late 1990s, average potential productivity of cultivated land, or *bioproductivity*, declined by 2.2 percent over the same period. In the meantime, a large decline in cultivated land was recorded after the late 1990s due to industrial development and urban expansion.

The leaders of China have recognized the constraints and challenges of sustainable agricultural and rural development. Recently, China has initiated the Five Balanced Development Strategies, which aim for balanced developments between rural and urban areas, between economic growth and social progress, among regions, between human intervention and environmental conservation and between internal and external economies. The Five Balanced Development Strategies are ambitious, and a number of the proposed strategies and reforms are bold. However, national leaders also realize that there are many barriers preventing them from achieving these lofty goals.

3. Prospects for China's economic growth in the future

Projection of economic growth in the long term is intricate as there is no useful model to conduct this kind of analysis. There is little information on future structural changes that may respond to economic growth and development policies. In this study, instead of using model-based scenarios for China's GDP growth, we adopt a more qualitative approach that takes into consideration the likely trends of the major driving forces of economic growth.

3.1 National development plan

In the Eleventh Five-Year Plan, 2006–2010 and the strategies for long-term economic development, China has set ambitious goals to metamorphose the nation into a “well-off society” (*Xaiokun Shehui*) in the next 20 years: double GDP in ten years; smooth transformation of the economy from transition to development and from agriculture to industry and services; sustainable management of the environment; and other social and political targets.

In order to achieve these goals, China's leaders have been pursuing a more sustainable development plan, the so-called Five Balanced (or integrated) Developments (FBD); i.e. developments between rural and urban areas, across regions; between economic and social aspects; between human activities, natural resources and environmental conservation; and between internal (domestic) and external economies. This FBD plan is backed by policies to stimulate the development of new technologies, education and urbanization, to make optimum progress in controlling deterioration of ecosystems and to move the nation to a more market-oriented and open economy.

3.2 Driving force prospective for economic growth

There is considerable potential for China's economic growth despite some development risks. Rapid growth is likely to continue in the coming decade though growth rates might decline gradually over time. New national leaders, who are strong reformists, took their positions in the government in early 2003. Several initiatives have been undertaken to boost China's economy. These include policies related to the strong implementation of macroeconomic stabilization, deepening market reforms, further liberalizing of the economy and emphasizing sustainable growth through increasing investment in R&D, education, health and infrastructure and resource and environmental protection. The following factors are generally considered to be the key driving forces underpinning China's economic growth in the future:

- a) **Macroeconomic stabilization.** Macroeconomic stabilization is likely to be further strengthened. The national leaders consider that macroeconomic stability is one of the pre-conditions to generate long-term economic growth as it will provide a favourable environment for both

domestic and foreign investment. A stabilized macroeconomic environment will also help the government to better foster development of the infrastructure and institutions necessary for sustainable growth. The stability system was well tested when China was seriously affected by the SARS epidemic and yet the economy recorded 9.5 percent growth in 2003.

- b) **Physical capital.** A high domestic savings rate is likely to remain in the coming decade. Capital formation was about 35 percent of the GDP in the 1980s and has increased enormously over time, from nearly 40 percent in the 1990s to 44.2 percent in 2003 and 2004 (NSBC 2005). The Development Research Center of State Council (DRC) projects that the current rate of investment in the coming ten years will be maintained (DRC 2002). These high investment rates indeed have also been experienced for a sustained time period in several Eastern Asian countries or regions such as Japan, Republic of Korea and Taiwan Province of China. High domestic savings rates, stable macroeconomic environment, increasing inflows of FDI and large markets are fundamental bases for high level investment in China's current as well as future economy.
- c) **Labour force.** Cheaper rural surplus labour has facilitated China's economic growth and structural changes. There is still an abundant and enormous pool of rural labourers who are seeking non-farm employment. This continued shift of labour from the agricultural to non-agricultural sectors will further accelerate the growth of labour-intensive industries and service sectors in the coming decade, and will continue to provide cheap industrial products to consumers in both China and the rest of the world. Export of labour-intensive products will expand under more liberalized world trade (Ianchovichina *et al.* 2004).
- d) **R&D spending.** According to the recent Eleventh Five-Year Plan, 2006–2010 and the Long Term Development Plan (2006–2020), the Boosting China's Development through Science and Education programme (*Ke Jiao Xing Guo*) will be further strengthened. The government investment in R&D is planned to grow more than the average growth of government fiscal revenue (State Council 2002). The growth in public investment in professional education (i.e. colleges and universities) has also increased substantially since the late 1990s (NSBC various issues). We expect that the total factor productivity increase contributed by technology changes in the future will exceed that in the past.
- e) **Human capital.** In addition to the *Ke Jiao Xing Guo* development programme, the national leaders decreed a new development plan, *Yi Ren Wei Ben* (or people-oriented development) in 2003. The new plan emphasizes overall human development (not only professional education), in particular rural primary education. In order to implement this new development plan, an ambitious programme has been proposed to reduce or eventually eliminate primary school education fees throughout China, including Western China and other less-developed regions. Other programmes aimed to improve primary, secondary and professional education are under consideration.
- f) **Market development and role of the government.** Emerging markets and evolving institutions in China's economy also show that China is preparing for sustainable growth in the first half of the twenty-first century. As China enters the twenty-first century, the rural economy is evolving to the point that it is ready to help China make the next step in modernization. Markets for labour, agricultural commodities, many inputs for farmers and rural industrial managers have flourished in recent years and are increasingly competitive and rational (Rozelle *et al.* 1999 and 2000). The direct provision of goods and services will be handled increasingly by the private sector. Meanwhile, the government is planning to thoroughly reform its administrative system and shift its role to providing public goods, overcoming market failures, and providing services that the private sector will not provide, but which will serve to further the transformation of China in the coming years (State Council 2003).

- g) **Urbanization.** Urbanization and newly initiated rural small-town development programmes will facilitate China's economic structural changes, create employment for rural and urban labourers, increase farmers' income and promote rural and urban demand for industrial commodities and services. The International Institute of Applied Systems Analysis (IIASA) projects that the level of urbanization will fall within a range of 50 to 55 percent in 2020 compared to 36 percent in 2000 (Toth *et al.* 2003).
- h) **Trade liberalization.** China's gains from economic globalization and trade liberalization will further boost its economic growth. Expanding labour-intensive industries, fostered also by new export opportunities, can contribute to China's development strategy that includes labour absorption into industries outside primary agriculture. Merchandise trade in the future will grow much faster than in the past (Ianchovichina *et al.* 2004). Moreover, the static impacts (i.e. merchandise trade) are probably only a small part of China's gains from trade liberalization; the dynamic effects such as capital accumulation and technology spillovers will be more substantial (van Tongeren *et al.* 2003).
- i) **Foreign direct investment.** Although the growth rates of FDI inflow may or may not be as high as those recorded in the past two decades, China will remain one of the most attractive countries for FDI in the post-WTO era and at least in the coming decade. China has attracted substantial FDI in past decades. After 2002 China has become the most important recipient of FDI in the world. In the past two decades, FDI has been pouring into the coastal regions. Recently, China's regional development plan and its increasing investment in infrastructure in less-developed regions have begun to impact the direction of FDI in China. Zhang and Post (2003) show that there is increasing FDI towards the western part of China to exploit its rich resources and stimulate domestic demand. Given the size of the market and the expectation of strong economic growth in the future, China is very likely to remain one of the most favoured investment destinations in the world.
- j) **Regional development programmes.** Under the FBD strategy growth in less-developed regions is expected to accelerate in the coming decades. In order to pursue overall development of the country, the central government has initiated several regional development programmes, particularly the Great Western Development Plan, Central China Development Program, Northeast China Development Program and new National Poverty Alleviation Program, to redirect resources towards less-developed regions. According to the nation's development plan, in the first ten years of this century, the major investments under regional development programmes include infrastructure, ecosystem and environmental conservation, and human resource development (Du 2003). We expect that implementation of the regional balanced development strategy will help the less-developed regions to catch up with the national growth path. This will create local employment and demand for commodities from the coastal region, and help China reduce income disparity among regions.

While we expect that high growth will remain in China for the next 20 years, there are other factors and uncertainties that may limit China's economic growth over time. These include:

- a) There could be potential risks associated with internal macroeconomic stability if China's income disparity continues to widen;
- b) The growth in labour supply will slow down in association with China's falling population growth rate and the changing age structure of the population (Toth, *et al.* 2003), which will lead to an increase in wages after certain years;
- c) The aged population will grow faster, which will lead to a rise in the dependence ratio in coming decades;
- d) As the dependence ratio rises, national savings propensity is likely to decline, which may impact the growth of domestic investment;

- e) After ten to 15 years, China will have basically finished the major tasks of its economic reforms that were initiated in the late 1970s. The gains from further economic reforms will be weak;
- f) With rapid economic growth, there will be considerable stress on environmental degradation if appropriate environmental protection policies are not emphasized; and
- g) There may be political risk and tension in the external environment, which could affect China's economic and political stability in the future (although this is highly unlikely). In recent years, after China emerged as one of leading importers of natural resources such as timber, fish meal, energy and minerals, some claim that there will be concerns about global food security (if China imports enormous amounts of food from the international market) and the natural resource base, for China's long-term rapid economic growth.

3.3 Economic growth prospects

Based on the above discussions, this subsection provides our prospects for China's economic growth in the first two decades of the twenty-first century. While our prospects are focused on the most likely growth scenario (baseline), we also formulate an alternative higher growth scenario (or high growth scenario) because one of the objectives of this study is to examine the local and global implications of China's rapid economic growth. The details of both the baseline growth scenario and high growth scenario for China from 2006 to 2020 are summarized in Table 8. For comparison, we also present the corresponding figures in the past 20 years (1985–2005).

Table 8. Projection of China's economy, 2001–2020

	Annual growth rate (%)					
	1985–1995	1996–2000	2001–2005	2006–2010	2011–2015	2016–2020
Baseline						
GDP	9.7	8.2	8.9	8.0	7.2	6.3
Per capita GDP	8.3	7.2	8.2	7.4	6.7	5.9
High growth						
GDP	9.7	8.2	8.9	7.6	6.6	6.7
Per capita GDP	8.3	7.2	8.2	8.2	7.4	7.5
Population	1.37	0.91	0.72	0.61	0.54	0.41
		Per capita GDP in				
		2000	2005	2010	2015	2020
Baseline:						
RMB		7 086	10 528	14 974	20 612	27 454
US\$		856	1 300	1 849	2 545	3 389
High growth						
RMB		7 086	10 528	15 613	22 331	30 638
US\$		856	1 300	1 927	2 757	3 782
Population (billion)		1.267	1.308	1.348	1.382	1.409

Note: Values are in 2000 constant prices.