INED Population Studies 3

Isabelle Attané
Baochang Gu *Editors*

# Analysing China's Population

## Social Change in a New Demographic Era

ined
INSTITUT NATIONAL
D'ÉTUDES DÉMOGRAPHIQUES

Springer

# Analysing China's Population

# INED Population Studies

Volume 3



This book series is devoted to publications of international relevance in population studies and demography as promoted by the French National Institute for Demographic Studies (INED, Paris). As one social science among many, demography is interlinked with related disciplines including sociology, anthropology, history and linguistics, and continuously explores its boundaries with neighbouring disciplines, ranging from epidemiology and biology to economics. The studies published in the series are based on solid empirical research and firm methodological foundations. Particular attention is paid to long-term and collaborative surveys. Guided by its distinguished Editorial Advisory Board, the INED series aims to provide international visibility to works of high academic standard recognized in the French-speaking scientific community. The series supports an internationally acknowledged style of demographic research, championed by INED for more than half a century and rekindled in such fields as the study of demographic situations around the world; the relationship between demographic conditions and development; international comparisons; migration, identities and territories; family studies; gender studies and sexuality; ageing, health and mortality; trajectories, mobility and social networks.

English language editing: Catriona Dutreuilh
Figures: Isabelle Brianchon

More information about this series at http://www.springer.com/series/11579

Isabelle Attané • Baochang Gu
Editors

# Analysing China's Population

## Social Change in a New Demographic Era

Springer

*Editors*
Isabelle Attané
Institut national d'études démographiques
133, bd Davout
75980 Paris Cedex 20
France

Baochang Gu
Centre for Population & Development Studies
Renmin University of China
Beijing
China

ISSN 2214-2452 ISSN 2214-2460 (electronic)
ISBN 978-94-017-8986-8 ISBN 978-94-017-8987-5 (eBook)
DOI 10.1007/978-94-017-8987-5
Springer Dordrecht Heidelberg New York London

Library of Congress Control Number: 2014939452



Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

# Contents

**1 China's Demography in a Changing Society: Old Problems and New Challenges** ..... 1
Isabelle Attané and Baochang Gu

**Part I China's Low Fertility: Facts and Correlates**

**2 China's Low Fertility: Evidence from the 2010 Census** ..... 15
Zhigang Guo and Baochang Gu

**3 Changing Patterns of Marriage and Divorce in Today's China** ..... 37
Jiehua Lu and Xiaofei Wang

**4 Education in China: Uneven Progress** ..... 51
Qiang Ren and Ping Zhu

**5 The Male Surplus in China's Marriage Market: Review and Prospects** ..... 77
Shuzhuo Li, Quanbao Jiang and Marcus W. Feldman

**6 Being a Woman in China Today: A Demography of Gender** ..... 95
Isabelle Attané

**Part II Modernization, Social Change and Social Segregation**

**7 Are China's Minority Nationalities Still on the Margins?** ..... 113
Dudley L. Poston and Qian Xiong

**8 Demographic and Social Impact of Internal Migration in China** ..... 139
Delia Davin

**9 China's Urbanization: A New "Leap Forward"?** ..... 163
Guixin Wang

**10 Urban-Rural Housing Inequality in Transitional China** ..... 179
Yanjie Bian and Chuntian Lu

**Part III Changing Age Structure, Labour Force and the Older Population**

**11 Mortality in China: Data Sources, Trends and Patterns** ..... 205
Zhongwei Zhao, Wei Chen, Jiaying Zhao and Xianling Zhang

**12 Dwindling Labour Supply in China: Scenarios for 2010–2060** ..... 227
Michele Bruni

**13 The Economic Support System and Changing Age Structure in China** ..... 255
Sang-Hyop Lee and Qiulin Chen

# Contributors

**Isabelle Attané** Institut national d'études démographiques, Paris, France

**Yanjie Bian** School of Humanities & Social Sciences, Xi'an Jiaotong University, Xi'an, China, and University of Minnesota, USA

**Michele Bruni** Centre for the Analysis of Public Policies–Public Policy Research Department, University of Modena, Modena, Italy

**Qiulin Chen** Chinese Academy of Social Sciences, Beijing, China

**Wei Chen** Australian National University, Canberra, Australia

**Delia Davin** University of Leeds, Leeds, UK

**Marcus W. Feldman** FSI, Stanford University, USA

**Baochang Gu** Center for Population and Development Studies, Renmin University of China, Beijing, China

**Zhigang Guo** Department of Sociology, Peking University, Beijing, China

**Quanbao Jiang** Xi'an Jiaotong University, IPDS, Xi'an, China

**Sang-Hyop Lee** Department of Economics, University of Hawaii, Manoa, Honolulu, USA

**Shuzhuo Li** Xi'an Jiaotong University, IPDS, Xi'an, China

**Chuntian Lu** School of Humanities & Social Sciences, Xi'an Jiaotong University, Xi'an, China, and University of Minnesota, USA

**Jiehua Lu** Department of Sociology, Peking University, Beijing, China

**Dudley L. Poston** Texas A&M University, USA

**Qiang Ren** Institute of Population Research, Peking University, Beijing, China

**Guixin Wang** Fudan University, Shanghai, China

**Xiaofei Wang** Department of Sociology, Peking University, Beijing, China

**Qian Xiong** Texas A&M University, USA

**Xianling Zhang** Australian National University, Canberra, Australia

**Jiaying Zhao** Australian National University, Canberra, Australia

**Zhongwei Zhao** Australian National University, Canberra, Australia

**Ping Zhu** Institute of Population Research, Peking University, Beijing, China

# Insets


**Inset 2.1** **Sources of National Demographic Data in China** ..... 16

**Inset 2.2** **China's Family Planning Policy: An Overview** ..... 19

**Inset 2.3** **Contraceptive Use and Reproductive Health** ..... 31

**Inset 4.1** **Household Registration and Mobility Control** ..... 66

**Inset 6.1** **Considerable Progress in Reproductive Health** ..... 103

**Inset 7.1** **Balancing Regional Development and Strengthening Border Regions** ..... 114

**Inset 7.2** **Contrasting Population Growth Rates Between the Ethnic Groups** ..... 120

**Inset 8.1** **Migration Data in the 2010 Census** ..... 140

**Inset 8.2** **Internal Migration: A Defining Feature of Demographic Growth at the Provincial Level** ..... 148

**Inset 10.1** **Urban Housing Policies from 1949 to 1978** ..... 181

**Inset 10.2** **Homesteads in Rural China** ..... 181

**Inset 10.3** **Urban Housing Policies after 1978** ..... 183

**Inset 11.1** **Health System Reforms** ..... 222

**Inset 12.1** **United Nations Projections and Assumptions** ..... 234

# Chapter 1
# China's Demography in a Changing Society: Old Problems and New Challenges

**Isabelle Attané and Baochang Gu**

China's most recent population census, the sixth to be organized since the founding of the People's Republic of China in 1949, was conducted in 2010.[1] Its results, which were released from late 2011 and published in early 2012, have revealed few unexpected trends. They tend to confirm a series of demographic changes that had been largely foreseen — even if sometimes underestimated — by demographers.

By and large, the 2010 census results bore out expectations. They indicate that, despite some suspicion on data quality (Zhao 2011), fertility continued to decline between 2000 and 2010, and that population ageing has significantly accelerated. In 10 years, the share of the population aged under 15 years has decreased by 6 percentage points, from 22.9 to 16.6 % in 2010, while the proportion of over-60s has increased by 2.5 points, from 10.8 to 13.3 %. According to the latest United Nations population prospects, the proportion of over-60s should more than double by 2035 to reach 27 %, and then 33 % in 2050 (UN-WPP 2012). By mid-century, with a median age of 49 years, China will be among the countries in the world most severely affected by population ageing, almost on a par with countries such as Germany (51 years), Italy and Spain (around 50 years), and not far behind those most advanced in this process, such as South Korea and Japan (53 years). In comparison, the median age of the French population will be 43 years at that time. Though these trends clearly confirm the end of the demographic transition in China, they also highlight the threat of rapid population ageing in coming decades.

[1] The five previous censuses were conducted in 1953, 1964, 1982, 1990, and 2000.

I. Attané (✉)
Institut national d'études démographiques
Paris, France
e-mail: attane@ined.fr

B. Gu
Center for Population and Development Studies, Renmin University of China, Beijing, China
e-mail: baochanggu@gmail.com

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_1, 

Another fact confirmed by the 2010 census is that, despite higher fertility, ageing in rural areas is more pronounced than in urban areas[2] due to massive flows of young adults from the countryside to cities and towns. A consequence of this large-scale internal migration is China's soaring urbanization; almost half of the total population are now city-dwellers. Even if the actual magnitude of urbanization has been questioned (Chang and Brada 2006), it is nonetheless a reality that more and more Chinese people are living in urban areas. All these demographic trends, which began several decades ago but have accelerated in the recent past, have been analysed and discussed in many studies over the years. Nevertheless, the 2010 census data give more evidence of how, and to what extent, China's demographic landscape is changing.

The past half-century has been a crucial period for China's demography. In this short period of time, China has completed the demographic transition, and has become a country with low population growth, at least when compared to its major Asian neighbours such as India, Indonesia, Pakistan or Bangladesh. As a consequence, China's share of the world population is shrinking: the country accounted for 22% of the world total in 1950 but only 19.5% in 2010. Indeed, the United Nations are predicting that the Chinese population may never reach 1.5 billion, but will level off at 1.45 billion in 2030 before starting to decline, falling to around 1 billion in 2100 (UN-WPP 2012). China's relative decline can be attributed both to the sharp slowdown in its population growth over the past half-century, but also to sustained population growth in rival countries and continents, such as Africa, whose share of the world population rose from 9% in 1950 to 15% in 2010, and especially India, whose share increased from 14% to almost 18% over the same period.

China's population is currently increasing by around 0.6% annually, i.e. 4 to 5 times more slowly than in the 1960s. So, while the country was gaining nearly 20 million people per year in the early 1970s, it has gained three times fewer on average each year of the past decade, at around 7 million annually. Chinese women, who were still giving birth to almost six children on average in 1970, had fewer than two from the early 1990s, i.e. almost as few as in the world's most developed countries. For mortality too, China is now in the forefront of developing countries, with a life expectancy at birth gradually approaching the European average.

Most of these demographic changes were initiated during Mao's era, but accelerated in parallel with the economic transition, which has led to profound social change. The three decades following the Communist takeover in 1949, which brought radical political and economic transformation, were marked by a quest for social equality. But equally radical was the liberal turnaround initiated by Deng Xiaoping in 1978, which resulted in a total overhaul of agricultural and industrial production. Since then, China has been moving away from its centrally planned economy towards a "socialist-type market economy", a transition that has led to unprecedented economic development. Its gross domestic product has increased by

[2] Chinese censuses distinguish between *chengshi* (cities) and *zhen* (small towns, variously translated in English as towns, townships or county towns). Together, the inhabitants of the cities and the towns are considered "urban" in contrast to the rural (*xiangcun* or *xian*) population. Some chapters of the present book refer to cities' and towns' populations separately, while other merge them into a single urban category.

about 8% per year on average since the 1980s, while remarkable gains in labour productivity have resulted in substantial improvements in purchasing power and a decline in overall poverty (Bosworth and Collins 2008; Yueh 2008).

But the dismantling of collective structures under the reform and opening-up policy (*gaige kaifang zhengce*) launched in 1978, overturned the social organization that had prevailed in the previous decades, producing an impact that extended far beyond the economy alone. Previously, each individual had depended on the state, through his or her work unit, for all aspects of daily life. Everyone enjoyed guaranteed access to employment, housing, health, education of children, and for urban dwellers, retirement and social insurance. Gradually transferred to the private sector, these areas are now governed by the market, which makes access to them less systematic, and therefore increasingly unequal.

The liberalization of the labour market, rising unemployment and the decline of the welfare state have led to growing socioeconomic inequalities. The Gini coefficient[3] — a commonly used measure of inequality of income or wealth — rose from 0.27 in the mid-1980s to 0.39 in 2001 and 0.47 in 2012, overtaking the level of 0.4 defined as "alarming" by the World Bank. In 2001, the official government newspaper the *People's Daily* deplored that "The income gap between urban and rural areas, between provinces, between professions and individuals is becoming ever wider".[4] Even if Gini coefficients have tended to stabilize in recent years,[5] inequalities in today's China are still greater than in India or in Bangladesh (with Gini coefficients of 0.34 and 0.32 in 2010 respectively, according to the World Bank[6]).

Rising income inequalities can be considered as a normal process during economic take-off, especially in the former centrally-planned economies that used to be very egalitarian (Huchet 2003). Today, however, these inequalities extend far beyond the economic sphere, and while China's middle-class is expanding, some sections of its population have seen little improvement to their living conditions, or suffer from patent and sometimes even growing discrimination, making China's society extremely divided (Zheng and Tok 2007). Having a residence registered in a rural or a urban area, living in a city or in the countryside, in the eastern or the western part of the country, being a man or a woman, are all constituent factors of social dichotomization.

In a context of extremely rapid social and economic transition, marriage and fertility behaviours, housing patterns, access to education, to individual mobility or to the labour market are all affected by significant change: in China as elsewhere, the post-demographic transition period, with declining birth rates and increasing life expectancy, is a time of major upheaval, for individuals, families and society as a whole. As family size decreases, families focus increasingly on their children

[3] The Gini coefficient is between the values of 0 and 1, with 0 representing perfect equality and 1 the highest level of inequality.

[4] *Renmin ribao*, 23 Aug 2001 [In Chinese].

[5] Xinhua News Agency. *Xinhua wang*, http://news.xinhuanet.com/english/china/2013-01/18/c_132111927.htm. Retrieved 25 Sept 2013.

[6] *GINI Index*. The World Bank. Available at http://data.worldbank.org/indicator/SI.POV.GINI. Accessed 11 Dec. 2013.

while the elderly, who are healthier and live longer, remain independent until later ages. In turn, not only are parental expectations much greater than ever in the past, but they are now also concentrated on just one or two children rather than many, as was the case in the past. The concentration of the various dimensions of family transmission, from both material and symbolic points of view, gives the Chinese child unprecedented value. As a consequence, intergenerational relationships are changing. The elderly are no longer the backbone of the family and interfere less in the lives of their children (Attané 2011). Along with the economic reforms and social liberalization, increasing individualization is observed, and individual roles and statuses are being profoundly altered.

In the twenty-first century, along with demographic and social change, China will have to deal with "old" problems that emerged or intensified some decades ago, such as, for instance, demographic masculinization, inequalities in access to education, endemic multidimensional poverty, massive flows of internal migrants, increasing job insecurity, and rapid urbanization. But the country will also face "new" challenges, among which the changing population age structure—in particular the unprecedented shrinkage and ageing of the labour force—and the management of population ageing, notably the need to develop new social structures and welfare benefits to compensate for families' gradual withdrawal from old-age support.

Many countries, including in the developing world, now face the challenges of population ageing and old-age support. What differs, however, in the case of China is the exceptional speed of ageing. With the rapid increase in both the proportion and numbers of older adults, China must adapt its policies and social structures to address the needs of this ageing population. The period granted by the demographic transition to achieve these adaptations is the period of "demographic dividend", during which working-age adults represent a large proportion of the total population, a situation deemed favourable to economic development (Birdsall et al. 2001; Bloom et al. 2003). In turn, economic development increases the national wealth, part of which can then be redistributed and assigned to the care of dependents. However, because the "demographic dividend" in China will be particularly fleeting, these adjustments will have to be made in a very short period of time. Moreover, despite the economic reforms launched from the late 1970s, China's economy remains largely undeveloped (Salditt et al. 2007) and the average standard of living remains relatively low (Cai et al. 2012). The challenge will thus be to ensure decent living conditions for an ever larger share of its population in the absence of a general pension system and in a context where intergenerational solidarity, the traditional mode of elder care, is compromised by the decline in family size and the sharp reduction in the number and proportion of working-age people.

The present book aims to address various defining patterns of China's demographic landscape in the early twenty-first century, some of which pose severe challenges to China's government. It is divided into three parts. Part One entitled "China's Low Fertility: Facts and Correlates", addresses a first concern relating to recent fertility trends — which are still a matter of debate, with opposing views about the need to maintain strict birth control — their causes and consequences. There is no doubt that the total fertility rate has been below the replacement level of 2.1 children per woman for around two decades, but how far below is still uncertain. In their

chapter "China's Low Fertility: Evidence from the 2010 Census", Zhigang Guo and Baochang Gu are far from adhering to the commonly expressed opinion that, due to recurrent undercounting of births, fertility has been significantly underestimated in the statistics for more than two decades. Instead, while Chinese birth control officials regard the unadjusted results of the recent censuses and annual surveys as implausible, and argue that the total fertility rate actually stands at around 1.8 children per woman, Zhigang Guo and Baochang Gu take the opposite view. They argue that the 2010 census reflects the true level of fertility, and that the birth control policy should be relaxed in order to slow down the ageing process and to remedy, at least partially, the labour shortage that is forecast for the coming decades.

Various parallel trends provide evidence of the significant decline in China's fertility. Today, in China as elsewhere, fertility is still largely dependent on marriage behaviours, and in particular on marriage timing and frequency. In their chapter "Changing Patterns of Marriage and Divorce in Today's China", Jiehua Lu and Xiaofei Wang state that while marriage has long been universal in Chinese society, things are changing and that marriage and family behaviours are gradually becoming more diversified, in urban areas especially. While conjugal bonds have long been considered as secondary in comparison to other relationships enacted by marriage ties within the extended family, they have become more valued in recent years and individual choices are given greater consideration. This chapter shows that, as part of this process of social change, first marriage is increasingly delayed for both men and women and that the age-specific proportions of unmarried people are growing. It also evidences that marriage behaviours are still influenced by various social and economic factors, such as educational levels and place of residence (rural/urban), and that divorce, which was extremely rare until recently, is now better accepted socially and therefore increasingly common.

The significant improvements in education observed in the recent decades have also clearly played in favour of a fertility decline. Qiang Ren and Ping Zhu's chapter entitled "Education in China: Uneven Progress" indicates that the overall educational levels have undergone a rapid, sustained increase since the late 1990s in the young generations, and that these improvements undeniably contribute to reshaping individual behaviours, especially those involving personal choices such as marriage and fertility. However, progress is uneven. Gaps remain, in particular between the sexes, ethnic groups, provinces, and places of residence (urban, rural), indicating that while most children are benefiting from the recent improvements in educational standards in urban areas, a significant number, notably children in remote rural areas and migrant children in cities, still lag behind in terms of human capital.

As stated earlier, the significant decline in China's fertility, which is radically changing the population age structure, will have various consequences on individuals, families and society as a whole. But while ageing is as an expected consequence of the fertility decline, the demographic masculinization that results from discrimination against girls in a context of declining fertility was not a predictable event. It will nonetheless reshape the sex structure of the population in the coming decades, raising important issues, in particular for young adults reaching marriage ages, as men will significantly outnumber women. In their chapter entitled "The Male Surplus in China's Marriage Market: Review and Prospects," Shuzhuo Li, Quanbao Jiang

and Marcus W. Feldman estimate the male surplus in China's population of marriageable age and investigate the possible social and individual consequences of the increasingly male-biased sex structure. They conclude that the consequences of the male marriage-squeeze will be mainly negative, with few or no benefits for society or individuals, be they men or women.

The sex imbalance will do little to improve the situation of Chinese women, who are still lagging behind men in many aspects of their life. Isabelle Attané's chapter entitled "Being a Woman in China Today: a Demography of Gender"[7] draws up a socio-demographic inventory of Chinese women's situation in the early twenty-first century context of demographic, economic and social transition. It also draws attention to the paradoxical effects of this transition whilst taking into account the diverse realities of women's experience, as Chinese society remains, in many ways, very attached to its social and family traditions. Indeed, despite recent social and economic progress, Chinese women still do not have the same opportunities as men for social and professional achievement, and paradoxically, reduced fertility has not been accompanied by an increase in the number of working women. On the contrary, the effects of the fertility decline on women's employment have been largely counteracted by the liberalization of the labour market (that has heightened competition between men and women) and state disengagement from childcare that has pushed up the cost of raising children, notably in matters of daycare, health and education, making it increasingly difficult and costly for women to reconcile their work and family lives.

In many respects, the attitude of Chinese society towards women is ambivalent. Such ambivalence not only concerns women, but is becoming a recurring feature. Part Two entitled "Modernization, Social Change and Social Segregation" focuses on various dimensions of social inequality that have emerged or grown more acute with the transformation of the economic system, and that in some cases generate or reinforce the dichotomization of society, not to say social segregation. While China is a source of constant concern to the international community, we often forget that it is not a homogeneous entity, and that there are significant disparities between the different population groups. Indeed, being a man or a woman, an urban resident or a rural migrant, belonging to the Han majority or to a minority group, all involve distinct ways of life and unequal access to various prerogatives.

A first concern is about the population groups that have been living together for centuries, China being an agglomerate of 56 officially recognized ethnic groups. While the Han constitute the overwhelming majority, the 55 ethnic minority groups differ in their size and level of integration with the Han majority. In their chapter entitled "Are China's Minority Nationalities still on the Margins?" Dudley Poston and Qian Xiong focus on the 18 largest groups. They first outline the history of Han-minority relations, and then analyse the socioeconomic and demographic characteristics of these minority groups in comparison to the Han. They investigate their

[7] This chapter is the partial reproduction of an article published in the academic journal *China Perspectives* in late 2012 (see Attané I. 2012, "Being a Woman in China Today: a Demography of Gender", *China Perspectives*, 2012/4, pp. 5–15).

social and spatial relationships in particular, concluding that the Chinese minorities are socially different from the Han majority due to centuries of spatial segregation.

But rural migrants, who are often still physically and socially segregated in cities, are also an example of the inequalities generated by the transition of China's economic system. Indeed, while large-scale internal migration has progressively become a major feature of demographic change in China, involving the temporary or permanent movement of tens and then hundreds of millions of people, mostly from rural towards urban areas, the migrant people have seldom become socially integrated. In her chapter entitled: "Demographic and Social Impact of Internal Migration in China," Delia Davin focuses on migration flows and their impact on age and sex structure, and then considers the gender differences in migration, looking at the numbers involved, reasons for migration and types of jobs occupied by migrant people. She then not only looks at the lives of migrants in their place of migration, but also considers the impact of migration on people left behind in the villages (spouse, children, parents, etc.) with knock-on consequences for family life, gender and intergenerational relationships, the household division of labour and child-rearing.

Internal migration is indissociable from urbanization, one of its major drivers in today's China. The urbanization process also generates various forms of inequality, as all Chinese people cannot equally access the comparative benefits usually associated with urban life. In his chapter entitled "China's Urbanization: A New 'Leap Forward'?", Guixin Wang uses the concept of "semi-" urbanization to describe the particularities of the Chinese context, where, due to the rigid household registration system (or *hukou* system), rural migrants in cities have to go through two distinct stages (a first stage of "centralization" followed by a second stage of "citizenization") before having a chance to benefit from the same rights and prerogatives as their urban-native counterparts. Guixin Wang then adopts a critical view of the government strategy that consists in making cities the most important actors in economic development, to the detriment of rural areas, and argues that sustainable urbanization calls for more balanced development between urban and rural economies, and the necessary integration of rural migrants into urban life.

Together with the household registration system to which it is closely linked, housing allocation is one of the systemic factors that perpetuate and even accentuate social inequalities and social segregation in China. In their chapter entitled "Urban-Rural Housing Inequality in Transitional China", Yanjie Bian and Chuntian Lu review the recent reforms in the housing allocation system and argue that while housing is a substantial dimension of quality of life, it is also an important constituent of inequality in both rural and urban China. Access to home ownership, now increasingly common in urban areas, and to home amenities (such as tap water, independent toilets, heater shower, etc.) is uneven, however, and still largely determined by factors such as educational level, occupation, migration status, etc. Yanjie Bian and Chuntian Lu then conclude that market mechanisms, which have triggered a significant increase in housing prices, are becoming a driving force for housing inequality in today's China.

As a result of these growing socioeconomic inequalities, China's society is increasingly divided, and many Chinese people therefore still have little or no access to the benefits of economic development. To address these new social disparities and conflicts, the Chinese government introduced in 2006 the concept of "harmonious society" (*Hexie shehui*) as an objective for the country's future socioeconomic development (Chan 2009). But this highly commendable objective may be severely challenged by further demographic changes. Indeed, while China's economic boom in the past two decades is, of course, partly due to reforms in the production system that have greatly improved labour productivity, it has also benefited from an extremely favourable demographic situation: a "demographic dividend" which has made hundreds of millions of working-age adults available to the economy while the economically dependent population — i.e. children (aged below 15 years) and the elderly (aged 60 or above) — have represented less than 40 % of the total population since the mid-1980s. But this demographic dividend, which is by definition a transient state, is disappearing, in parallel with the increase in life expectancy and the acceleration of population ageing, and this could exacerbate the social inequalities that the goal of "harmonious society" is designed to tackle.

There is no doubt that the inequalities threatening social cohesion represent a major challenge to the Chinese government's objective of achieving a "harmonious society". Solving these problems will be all the more difficult, entrenched as they are in an increasingly unfavourable population structure. Part Three entitled "Changing Age Structure, Labour Force and the Older Population" therefore addresses what will probably be the greatest challenge in the coming decades: the shrinkage of the working-age population that will accompany population ageing. As stated earlier, China has undergone considerable demographic transformations in its recent past and, along with the sharp decline in fertility from the 1970s, the reversal of the age-pyramid in the coming decades will increasingly result from the decline in mortality.

In their chapter entitled "Mortality in China: Data Sources, Trends and Patterns", Zhongwei Zhao, Wei Chen, Jiaying Zhao, and Xianling Zhang address the important issue of mortality in the context of epidemiological transition. They first indicate that while China has continued to lower its mortality in the recent decades, there are still very few detailed studies on how this has occurred or on how mortality has evolved in comparison to other countries. They explain this paradox partly by the fact that mortality studies in China have long been overshadowed by those on fertility. A lack of knowledge and limited accessibility of some mortality data are also factors at play. In a near future, however, things will change. Indeed, with the stabilization of fertility at a low or very low level with little chance of rebound, and rapid population ageing, there will be increasing demand from both the government and civil society for knowledge of mortality patterns as part of an effort to understand overall living conditions in China. As a consequence, research on mortality will logically take precedence over that on fertility. Zhongwei Zhao, Wei Chen, Jiaying Zhao, and Xianling Zhang start with a review of China's major data sources on mortality, on the purposes of data collection and the methods used. Their chapter then examines China's recent mortality decline, the differentials between urban and

rural areas, and changes in major causes of death. The authors conclude their chapter by stating that, along with the rapid increase in the number and proportion of old people, the absence of generalized and efficient medical insurance programs and the negative health impacts of social and income inequalities may represent major obstacles for raising the longevity of the Chinese people. They also suggest that, for the same reasons, there may be little improvement in the population health status, in particular among the more socioeconomically disadvantaged groups.

This said, maintaining the population in good health will be crucial for China's government in the coming decades. Of particular concern will be the need to ensure a healthy labour force in order to maximize efficiency. Increasing labour productivity by improving the health of the workforce (Tompa 2002) — especially in activities where productivity is sensitive to health status — could be one way to compensate, at least partially, for the decline in the working-age population.

As stated above, the fertility decline and the increase in average life duration have significantly modified the age structure of China's population in the recent past. But the change will be even more profound in the coming decades, leading to a total reversal of the age-pyramid within a century: in 1950, 34.3 % of China's population was aged below 15 and 7.5 % was aged 60 +. But in 2050, these proportions will be 14.7 % and 32.8 %, respectively (UN-WPP 2012). Starting from 2010, one consequence of the changing age structure will be a gradual decline in the working-age population (which will shrink by around 25 % between 2010 and 2050), leading to a structural shortage of labour supply. In his chapter entitled "Dwindling Labour Supply in China: Scenarios for 2010–2060", Michele Bruni raises the central question of whether China can make up for the unprecedented reduction in its working-age population by relying exclusively on increased labour productivity, on the delocalization of production, and possibly on other measures such as the abolition of the household registration system and of the one-child policy, and a postponement of the legal age of retirement. Interestingly, he advances the hypothesis that no matter what measures are taken, they will be insufficient to alleviate the labour shortage, and China's government may have no choice but to resort to mass international immigration.

In this context of demographic upheaval, another key issue which has been widely discussed is that of old-age support (Cai et al. 2012; Jiang 1995; Pei and Pillai 1999). This issue will be of concern in urban China, where fertility decline has been earlier and sharper. But it will also pose severe challenges to both the welfare system and civil society in rural China where, despite higher fertility, internal migration—that overwhelmingly involves rural young adults leaving their village to settle in cities—is mechanically accelerating the de facto ageing of the rural population, as demonstrated in Delia Davin's chapter. As a consequence, the traditional mechanism of old-age intergenerational support is no longer sustainable, and the care for the rural elderly is becoming a dilemma, as they can rely on neither children nor — contrary to most of their urban counterparts — retirement pensions and social security. In their chapter entitled "The Economic Support System and Changing Age Structure in China", Sang-Hyop Lee and Qiulin Chen provide insight into some important features of the recent changes in intergenerational resource allocation

in China. They point out that reallocations to children are currently much larger than those to the elderly because there are many more children than older adults. But the population is ageing rapidly, so reallocations are shifting progressively from the young to the old.

The extremely rapid demographic transition in China since the mid-twentieth century, along with the transition of the economic system, has changed not only Chinese society, but also family and individual behaviours. The future of China is uncertain. To retain its place in the forefront of world economic powers it will have to overcome many obstacles. One of them will be to adapt its economic structures to demographic change by becoming less labour-intensive and by offering a more qualified labour supply (Attané 2011). Another challenge will be to provide future generations with decent living conditions, and thereby enable them to acquire sufficient cultural and social capital. Only then will China be in a position to address its widening socioeconomic inequalities, and to reach the objective of a "harmonious" society.

## References

Attané, I. (2011). *Au pays des enfants rares. La Chine vers une catastrophe démographique*. Paris: Fayard.

Birdsall, N., Kelley, A., & Sinding, S. (2001). *Population matters: Demographic change, economic growth and poverty in the developing world*. Oxford: Oxford University Press.

Bloom, D., Canning, D., & Sevilla, J. (2003). *The demographic dividend. A new perspective on the economic consequences of population change*. Population matters: Rand's Publication. http://www.rand.org/pubs/monograph_reports/2007/MR1274.pdf. Accessed 10 Nov 2013.

Bosworth, B., & Collins, S. M. (2008). Accounting for growth: Comparing China and India. *Journal of Economic Perspectives,* 22(1), 45–66.

Cai, F., Giles, J., O'Keefe, P., & Wang, D. (2012). The elderly and old age support in rural China. The world bank. https://openknowledge.worldbank.org/bitstream/handle/10986/2249/675220PUB0EPI0067882B09780821386859.pdf?sequence=1. Accessed 3 Dec 2013.

Chan, K. (2009). *Harmonious society. International encyclopedia of civil society* (pp. 821–825) Hong Kong: The Chinese University of Hong Kong.

Chang, G. H., & Brada, J. C. (2006). The paradox of China's growing under-urbanization. *Economic Systems, 30,* 24–40.

Huchet, J.-F. (2003). Une réponse politique aux défis économiques de la Chine. *Le Monde*. 28 Jan 2003.

Jiang, L. (1995). Changing kinship structure and its implications for old-age support in urban and rural China. *Population Studies, 49*(1), 127–145.

Pei, X., & Pillai, V. K. (1999). Old age support in China: The role of the state and the family. *International Journal of Aging and Human Development, 49*(3), 197–212.

Salditt, F., Whiteford, P., & Adema, W. (2007). Pension reform in China: progress and prospects. OECD. http://www.oecd.org/dataoecd/31/26/38757039.pdf. Accessed 3 Nov 2013.

Tompa, E. (2002). The impact of health on productivity: Empirical evidence and policy implications. The review of economic performance and social progress, 181–202. http://www.csls.ca/repsp/2/emiletompa.pdf. Accessed 3 Dec 2013.

UN-WPP. (2012). United Nations, world population prospects, the 2012 revision. http://esa.un.org/wpp/unpp/panel_population.htm. Accessed 27 Sept 2013.

Yueh, L. (2008). *How productive is Chinese labour? The contributions of labour market reforms, competition and globalisation*. Economics series working papers, 418. University of Oxford, Department of Economics.

Zhao, Z. (2011). China's far below replacement fertility and its long-term impact. *Demographic Research, 25,* 819–836.

Zheng, Y., & Tok, S. K. (2007). *'Harmonious society' and 'Harmonious world': China's policy discourse under Hu Jintao*. China Policy Institute, The University of Nottingham. Briefing Series, 26.

# Part I
# China's Low Fertility: Facts and Correlates

# Chapter 2
# China's Low Fertility: Evidence from the 2010 Census

**Zhigang Guo and Baochang Gu**

## 2.1 Introduction

After four decades of strict birth control, the rapid growth of China's population has been curbed. According to the official figures, the total fertility rate dropped below replacement level in the early 1990s, and has continued to decline since then, remaining at a very low level since the early 2000s. This long-lasting low fertility is therefore expected to have significant consequences for China's demographic future, especially in terms of the decline in working-age population and the acceleration of population ageing.

As early as 1980, when the one-child policy was enforced, the Central Committee of China's Communist Party (CCP) had anticipated rapid demographic ageing and pledged to take preventive measures, among which the possibility of relaxing the birth control policy "after thirty years" (CCP 1980). In 2000, however, the Central Committee of the CCP and the State Council issued the "Decision on the strengthening of population control and family planning to stabilize the low fertility rate", which was reiterated in 2006 (CCP 2000; CCP 2006). It was not until 2012 and the 18th national congress of CCP that the official discourse began to change. It now calls for "adhering to the basic national family planning policy, improving the quality of births, and gradually perfecting population policies to promote a long-term and well-balanced development of the population", with the notable omission of any further reference to the need to "stabilize low fertility" (Hu 2012). This change in the official discourse is clearly linked to the concomitant release of the results of China's sixth national population census conducted in 2010 (NBS 2011; PCO 2012), which, among other results, revealed acute population ageing, occurring even faster than expected.

Z. Guo (✉)
Department of Sociology, Peking University, Beijing, China
e-mail: zguo@pku.edu.cn

B. Gu
Center for Population and Development Studies, Renmin University of China, Beijing, China
e-mail: baochanggu@gmail.com

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_2, 

This chapter first looks at the reasons behind this poor understanding of the population situation, and defends the hypothesis that official figures have recurrently over-estimated fertility. It will then examine in greater depth the recent fertility trends and patterns as they appear from the available sources, focusing in particular on the recent postponement of marriage and childbearing. This will be followed by a discussion of the reliability of the 2010 census data and, in particular, of the plausibility of widespread under-reporting of births, a hypothesis still largely supported by Chinese officials.

## 2.2 Recent Official Population Estimates

The 2010 population census indicates that on 1 November 2010, the total population of China was 1.34 billion, among which 16.6 % were children (aged 0–14 years), 70.1 % were working-age adults (aged 15–59 years) and 13.3 % were elderly people (aged 60 years and over), with 49.7 % of Chinese now living in urban areas (cities and townships). These census results underline trends that appear to be more pronounced than was anticipated by the previous official population plans, i.e. fertility reduction, population ageing and urbanization. If we consider that these census results are reliable, as discussed later, they suggest that the population estimates made in past decades were seriously inaccurate and misleading, in particular those related to fertility.

**Inset 2.1 Sources of National Demographic Data in China**

In China, three state agencies collect demographic data at the national level: the Ministry of Public Security (*Guojia gong'an bu*), the National Bureau of Statistics (*Guojia tongji ju*) and the National Health and Family Planning Commission (*Guojia weisheng he jihua shengyu weiyuanhui*), formerly the National Population and Family Planning Commission.

The Ministry of Public Security provides vital statistics (*huji*) based on the household registration system. The National Bureau of Statistics is responsible for the organization of population censuses (*renkou pucha*), intercensal population sample surveys (*renkou chouyang diaocha*), and annual surveys on population change. Since the founding of the People's Republic of China in 1949, six population censuses (1953, 1964, 1982, 1990, 2000 and 2010) and three intercensal sample surveys (1987, 1995 and 2005) have been organized. The National Health and Family Planning Commission provides independent statistics delivered annually, both at the national and provincial levels, and also regularly organizes national surveys on fertility, birth control and reproductive health (1982, 1988, 1992, 1997, 2001, and 2006) describing, among other features, the conditions of fertility and reproductive health of Chinese women.

**I.A.**

**Table 2.1** Unadjusted and adjusted population figures for 2000, 2005 and 2010

| | 10th five-year population plan (2001–2005) | | | 11th five-year population plan (2006–2010) | | |
|---|---|---|---|---|---|---|
| | Population in 2000 (millions) | Population in 2005 (millions) | Difference (millions[2]) | Population in 2005 (millions) | Population in 2010 (millions) | Difference (millions) |
| Unadjusted data | 1,265 | 1,308 | 43 | 1,308 | 1,340 | 32 |
| Figures used or obtained in the projections | 1,283 | 1,331 | 48 | 1,308 (No adjustment) | 1,360 | 52 |
| Difference (in million) | 18 | 23 | – | – | 20 | – |

Sources: PCO (2002, 2012); NBS (2007a); NFPC (2001); NPFPC (2006)

In fact, almost all national population censuses and surveys conducted in the past twenty years reported a very low total fertility rate (TFR). But these results were always considered unreliable because flawed by serious under-reporting of births, in line with the prevailing attitude among both the relevant political authorities and most Chinese scholars, who refuse to acknowledge the possibility of a very low fertility rate in China. The census and survey figures were therefore adjusted using indirect estimation methods which increased the number of births and raised the TFR to about 1.8. Such adjustments have been taken for granted in most of the recent official population projections formulated by the relevant government departments, leading to a systematic underestimation of the ageing process and to misleading population forecasts, as in the research report on China's national strategy on population development (NPDS 2007).

For instance, the 10th Five-year Population Plan (2001–2005) (NFPC 2001) used the official TFR of 1.8 to elaborate population estimates and adjusted the population observed at the 2000 census (1,265 million) by + 17 million (to reach a total of 1,283 million), reflecting the Chinese government's lack of confidence in the census data. On this basis, this Plan projected a total population of 1,331 million for 2005 (Zhuang and Zhang 2003). But it appeared later that this projected figure was well above that revealed by the 2005 Nationwide 1 % Population Sample Survey which found a total of just 1,308 million, a difference of 23 million (Table 2.1). While the 10th Five-year Population Plan called for population growth between 2000 and 2005 to remain below 56 million, the apparent growth (i.e. the difference between the adjusted figure of 1,283 million for 2000, and the unadjusted figure of 1,308 million for 2005) was much lower, at only 25 million. Even when comparing the unadjusted results, the growth between 2000 and 2005 was just 43 million. Such a discrepancy provides evidence that the adjusted population used as the basis for these projections, and in particular the fertility assumptions, were not very realistic.

In the 11th Five-year Population Plan (2006–2010), the population used as a basis for the projections was the unadjusted figure obtained from the 2005 Nationwide 1 % Population Sample Survey, but the fertility rate was again assumed to be 1.8

children per woman. According to these projections, the population would therefore have reached 1,360 million in 2010 (NFPC 2006). However, the total population reported at the 2010 population census was 1,340 million, a difference of 20 million (Table 2.1). Thus, while the average annual population growth was expected to be around 10 million, it in fact reached only around 6 million. Again, significant discrepancies appear between the projected population and the unadjusted census data, again questioning the accuracy of the assumptions used for the projections.

## 2.3 Fertility Estimates

While the Chinese government has based its statistics on a TFR of 1.8 children per woman since the mid-1990s with no empirical evidence to justify it, most of the other recent available data, including those from the population censuses, the annual surveys on population change conducted by the National Bureau of Statistics (NBS), and the surveys conducted by the National Population and Family Planning Commission, all reveal a much lower TFR which plateaus at around 1.3–1.5 children per woman (Fig. 2.1). In 2010, the 6th census revealed an even lower TFR, of only 1.19 at the national level. Even when taking into account a possible underestimation of fertility at the 2010 census due to under-reporting of births, back-projections indicate nevertheless that the TFR in the preceding years was well below the official figure of 1.8 (Guo 2011; Zhu 2012; Wang et al. 2013). These results indicate that China is now among the very few countries in the world with "lowest-low" fertility, together with Japan (around 1.3 in 2015), Republic of Korea (1.3), the Russian Federation (1.4), Spain (1.4) and Germany (1.4) (UN-WPP 2012). Considering the size of China's population (still 19% of the world population in 2015) and its overall level of socioeconomic development, these results are somewhat alarming and point up the urgent need for a reassessment of the actual situation.

Figure 2.1 provides a comparison of the TFRs as they appear, or are reconstructed, from the most recent available sources. They are all consistent with the results of the back-projections based on the 2010 census data. Indeed, they all indicate that China's TFR dropped below replacement level in the early 1990s, and then remained at around 1.4–1.5 in the following 15 years. The only exception is the survey conducted in 2006 by the NPFPC, which provides a comparatively high TFR, close to the official figure of 1.8 children per woman. Even though the results of this survey are inconsistent with those from the other available sources, they nonetheless served as an argument for the government to advocate a strengthening of the family planning programme so as to maintain fertility at a low level by all means (CCP 2006). Even after several Chinese scholars had questioned the reliability of the 2006 survey results and argued that fertility was overestimated due to sampling bias (Guo 2009; Zhao and Guo 2010), this survey nonetheless continued to be used as justification for the official figure of 1.8, and therefore contributed to maintaining uncertainty about actual fertility trends. Nevertheless, as demonstrated below, the

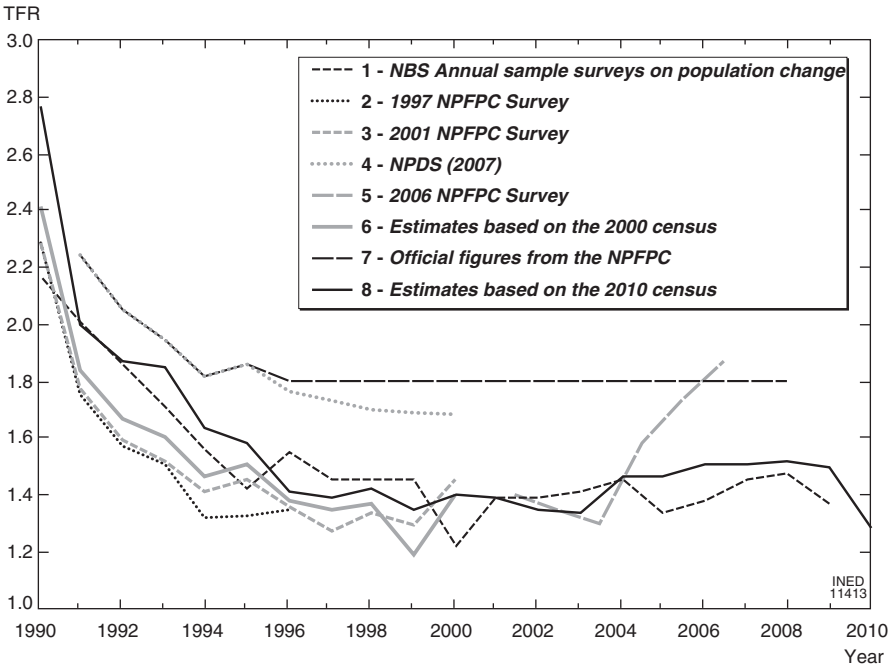



**Fig. 2.1** Fertility (TFR) trends as observed from various sources, 1990–2010 (Sources and notes: *(1)* National Bureau of Statistics. Annual sample surveys on population change (NBS 1990–2010); *(2)* Authors' calculations based on the data from the 1997 National Population and Reproductive Health Survey, National Population and Family Planning Commission; *(3)* Calculations by Ding (2003) based on the data from the 2001 National Population and Reproductive Health Survey, National Population and Family Planning Commission; *(4)* NPDS (2007). Medium Scenario; *(5)* See Zhang (2008); *(6)* Estimates based on the 2000 census (NBS 2007b); *(7)* Official figures from the NPFPC (2009); *(8)* Estimates by Guo (2011) based on the 2010 census data.

2010 census once again provides further evidence of the low fertility prevailing in China since the mid-1990s.

### Inset 2.2 China's Family Planning Policy: An Overview

At the Communist takeover in 1949, the new Chinese government had no intention of regulating population growth. Far from viewing a large population as problematic, socialist ideologues saw it as a force for economic prosperity. Moreover, due to the absence of reliable sources, very little was known at that time about the demographics of the world's most populous country. The early years of the regime were therefore marked by openly pro-natalist

rhetoric, and its vast population was considered as the most precious capital of revolutionary China.

The first population census (1953) revealed that the population totalled 590 million, 100 million more than expected. This sparked fears that excessively rapid population growth would compromise economic development. Only then did young socialist China engage in a Malthusian debate. Temporarily convinced by birth-control advocates, Mao Zedong declared in 1956: "Except for areas inhabited by national minorities, it is necessary to publicize and popularize fertility regulation and promote birth control in all densely populated regions." (Zou 1986, p. 4). A few months later, the first birth-control campaign was launched. The contradiction between population growth and economic development was abruptly denounced. China started producing contraceptives and liberalized sterilization and abortion.

Owing to the lack of efficient methods, the shortage of skilled personnel, and the traditional Chinese reluctance to discuss sexual matters, family-planning propaganda remained confined to urban areas. This initial attempt had no visible effect on fertility. The anti-rightist movement unleashed in 1957 put an end to this initiative, and population growth ceased to be regarded as a problem per se. Industrial development was restored as a priority. With the Great Leap Forward, launched in 1958, the authorities feared that the labour supply would fall short of what was needed to build socialism. Efforts to regulate fertility suddenly stopped, and contraceptive production was halted.

A few years later, however, birth control was back on the agenda. In the years (1959–1961) that followed the Great Leap Forward, the Great Famine caused an estimated 30 million deaths, exacerbating the imbalance between food supply and population. The birth rate plunged. In 1960, deaths even exceeded births, causing a net population decline of 3 million people. Then came the recovery. The millions of children whose conception had been postponed because of famine, political instability, and the economic crisis swelled the ranks of already large cohorts. China registered an exceptional baby boom in the early 1960s, with 25–30 million children born every year. The government discreetly drew the lessons from the Great Leap Forward. It made agriculture a priority again, and the problems of population growth were no longer ignored.

In 1962, a second campaign was launched. To reduce the number of births, the authorities opted for delayed marriage and wider distribution of contraceptives. Abortion was further liberalized in 1962: it could now be performed at the sole request of the pregnant mother and it was free if she was married. The intra-uterine device (IUD) was introduced and vasectomy strongly encouraged. This second attempt at birth control, better organized and more pragmatic, was relatively successful in some big cities. But before it had a chance to spread to rural areas, it was swept away by the Cultural Revolution launched in the summer of 1966.

At the start of the 1970s, the demographic transition was still modest. Mortality was declining, but the birth rate kept rising. With fewer deaths and more births, population growth peaked at more than 2% per year, hitting 2.8% in 1968. Twenty million people were being added each year. After having been forgotten for some years, birth control became a national priority again. In 1971, the Council of State's Directive 51 marked the official launch of the third birth-control campaign, which would be pursued relentlessly in the following decades.

This third family planning campaign was a turning point in China's demographic history. Measures were introduced with the aim of controlling the proximate determinants of fertility: age at marriage, contraceptive use and, indirectly, abortion. The regulations made public in 1973 advocated late marriage, birth spacing and fewer children, although requirements varied for different population categories. Aware of the diversity of settlement patterns, cultures, production modes and socioeconomic conditions across China, the campaign promoters distinguished between the urban population, the rural population and ethnic minorities. Urban residents were subject to the strictest rules: women were expected to wait until age 25 to marry and men until 28, and couples were expected to have no more than two children. Less drastic rules were imposed on rural residents: a minimum age at marriage of 23 years for women and 25 for men, and a maximum of three children. However, both city and rural residents were required to space births by three or four years. No instructions were established for ethnic minorities at that time. Their numbers were small and they were mainly confined to sparsely populated peripheral regions. Owing to their relatively small share in the total population, they did not have a major role to play in achieving the national target of population control.

As a result of these measures, the fertility of Chinese women was more than halved in less than a decade, from 5.7 children per woman in 1970 to 2.7 in 1978. By the late 1970s, the threat of unsustainable population growth had thus diminished. But this decline was nevertheless considered insufficient, especially as the large cohorts born in the 1960s were reaching childbearing age, which presaged another rise in the birth rate, incompatible with the goal of economic modernization. The reform and opening up policy introduced in 1978 by Deng Xiaoping, included population control to facilitate economic growth (Chen 1979). To meet that target, the new family planning policy, officially announced in 1979, introduced the draconian norm of one child (*du sheng zinü zhengce*), with which 95% of city dwellers and 90% of peasants were expected to comply. Couples were required to make a commitment to having only one child by signing a "one child certificate" in exchange for various benefits, which varied from place to place.

During that period, however, the incompatibility of population targets with families' strategies fuelled strong resistance to family planning, particularly

in rural areas. The government therefore relaxed the one-child policy in 1984, and since then, the family planning policy has not been applied uniformly (Yin 1995). In the countryside, couples are generally allowed to have a second and even a third child, especially some ethnic minorities. Eligibility for a second child is not the same across the country, however, with criteria varying across provinces, and sometimes even from one district or one village to another. Under the current policy, urban couples are entitled to have a second child only if either the father or the mother are themselves an only child.

Given China's low population growth, its very low fertility, and the fast population ageing, the wisdom of pursuing a strict family planning policy is increasingly questioned. However, at the time the present book went to press, relaxation of the one-child policy was still under debate.

**I.A.**

**References**

Chen, M. (1979). Shixian si ge xiandaihua, bixu you jihua de kongzhi renkou zengzhang. (Achieving the Four Modernizations requires planned control of population growth). *Renmin ribao* (*People's Daily*), 11 Aug 1979.

Yin, W. (1995). Lun zhongguo shengqu renkou kongzhi yu zhengce zhuanhuan de fei tongbu xing (Lack of synchronization between political change and population control in Chinese provinces). *Renkou xuekan* (*Demographic journal*)*, 2*,3–8.

Zou, P. (1986). Guanyu jianguo chuqi woguo renkou zhengce zhuanbian de hui gu yu sikao. (Examination of changes in Chinese population policy after the Revolution). *Renkou yu jingji* (*Population and Economics*), *6*, 8–11.

## 2.4 Further Evidence of Low Fertility in Today's China

As stated above, the total fertility rate was 1.19 children per woman according to the 2010 census, a level far below replacement level and the lowest level ever reached in China (in comparison, the 2005 Nationwide 1 % Population Sample Survey gave a TFR of 1.34, and the 2000 population census a TFR of 1.22) which, again, was seriously questioned (Wang and Ge 2013; Tao and Zhang 2013; Yang and Zhao 2013). However, as indicated in Fig. 2.1, back-projections based on the 2010 census data give results consistent with the very low fertility levels found in the nationwide surveys of the past two decades. The 2010 census results therefore not only provide further evidence of the very low fertility that has prevailed in China since the mid-1990s, but also cast further doubt on the accuracy of the official fertility estimates. A more detailed analysis sheds light on some underlying factors that support the fertility decline.

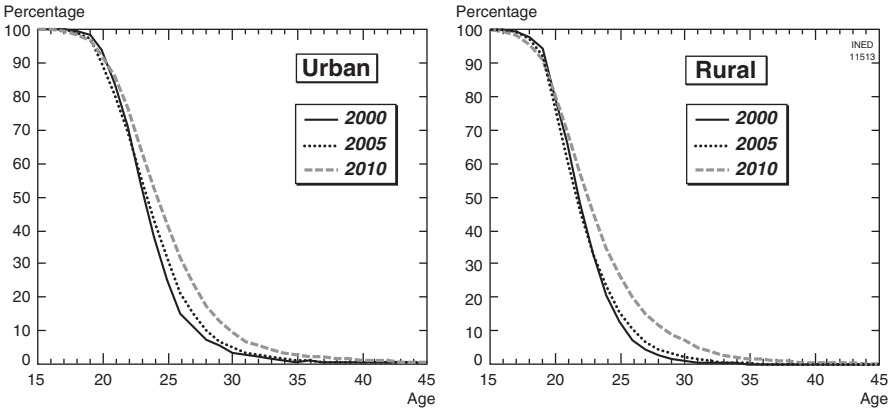



**Fig. 2.2.** Age-specific proportions of never-married urban-rural women in 2000, 2005 and 2010 (Sources: PCO 2002, 2012; NBS 2007a)

### *2.4.1 Marriage Postponement*

Marriage postponement, generally followed by a postponement of childbearing, is a decisive factor in fertility transition. In China's dual society, where urban areas are much more developed than most rural ones, the social change that leads to change in marriage and fertility behaviours first occurred among urban residents, who were then followed by their rural counterparts.

Figure 2.2 presents the proportions of urban and rural never-married women in different years. While little change is observed in the age-specific proportions of never-married rural women between 2000 and 2005, more significant change in marriage behaviours appears for rural women aged 20–35 between 2005 and 2010. The change is more striking for the younger rural women aged 22–25, i.e. at the peak reproduction ages, with a proportion of never-married that increased by around 10 percentage points during these five years.

The proportions of never-married among urban women increased even more rapidly between 2000 and 2010, although overall fertility does not appear to have been seriously affected, for various reasons. First, as demonstrated below, a fertility recuperation effect is observed in urban areas, after a period of significant postponement in the older cohorts, which has partly offset the effect of postponed marriage and childbearing in the younger cohorts. Second, it is likely that the increasing number of migrants moving from rural to urban areas positively influences overall urban fertility as migrants have more children on average than urban couples (although they have lower fertility than their rural counterparts).

**Table 2.2** Unadjusted TFR and parity-specific fertility rates by place of residence (urban/rural) in 2000, 2005 and 2010

| Data source | Place of residence | Parity-specific fertility rates TFR(i) | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3+ | TFR |
| 2010 census | Urban | 0.69 | 0.26 | 0.04 | 0.98 |
| | Rural | 0.77 | 0.54 | 0.13 | 1.44 |
| | China | 0.73 | 0.38 | 0.08 | 1.19 |
| 2005 Nationwide 1% population sample survey | Urban | 0.80 | 0.22 | 0.02 | 1.04 |
| | Rural | 0.99 | 0.56 | 0.10 | 1.65 |
| | China | 0.89 | 0.38 | 0.06 | 1.34 |
| 2000 census | Urban | 0.77 | 0.14 | 0.02 | 0.94 |
| | Rural | 0.95 | 0.39 | 0.10 | 1.43 |
| | China | 0.87 | 0.29 | 0.07 | 1.22 |

Sources: PCO (2002, 2012); NBS (2007a)

### *2.4.2 A Decline in First-Birth Fertility Rates*

Table 2.2 displays the unadjusted parity-specific fertility rates by place of residence (urban and rural) at the 2000 and 2010 censuses, and at the 2005 Nationwide 1% Population Sample Survey. It appears that between 2000 and 2005, the total fertility rate increased slightly for both urban and rural residents, due to the slight increase in TFR(1) and TFR(2). Between 2005 and 2010, however, TFR(1) decreased significantly both in urban and rural areas, while TFR(2) and TFR(3+) remained practically stable.

We note, however, that the decline in TFR(1) was greater in rural areas, where it dropped by 0.22 points between 2005 and 2010, from 0.99 to 0.77, versus a decrease of only 0.11 points for urban areas, from 0.80 to 0.69. This decline in TFR(1) is unlikely to be the result of intentional under-reporting of births, since the rates for parity one were well below 1.0, i.e. much lower than the level permitted by the government's fertility policy. In addition, although it is known that some young couples, especially in cities, are willing to give up childbearing, there is no evidence that such cases are becoming widespread nationwide. This decline might plausibly be due to a period effect, i.e. a change in childbearing timing, which is known to modify the TFR (Bongaarts and Feeney 1998; Bongaarts and Sobotka 2012; Fig. 2.3).

Delayed marriage and childbearing are common features of low-fertility populations (Guo 2008; Zhao and Guo 2010). In China, the average age at childbearing increased by two years between 2005 and 2010, from 24.6 to 26.6 years, with a particularly fast average annual increase of 0.4 years (Table 2.3). The downward trend in TFR(1) is therefore likely to be associated with the postponement of childbearing. Actually, the peak ages for reproduction have shifted from 24–25 years in 2000 to 26–27 years in 2010 in urban areas, and from 22–23 years to 23–24 years in rural areas (Fig. 2.3). In addition, it would appear that the decrease in age-specific fertility rates before age 22 is almost fully offset by the increase after age 30, which

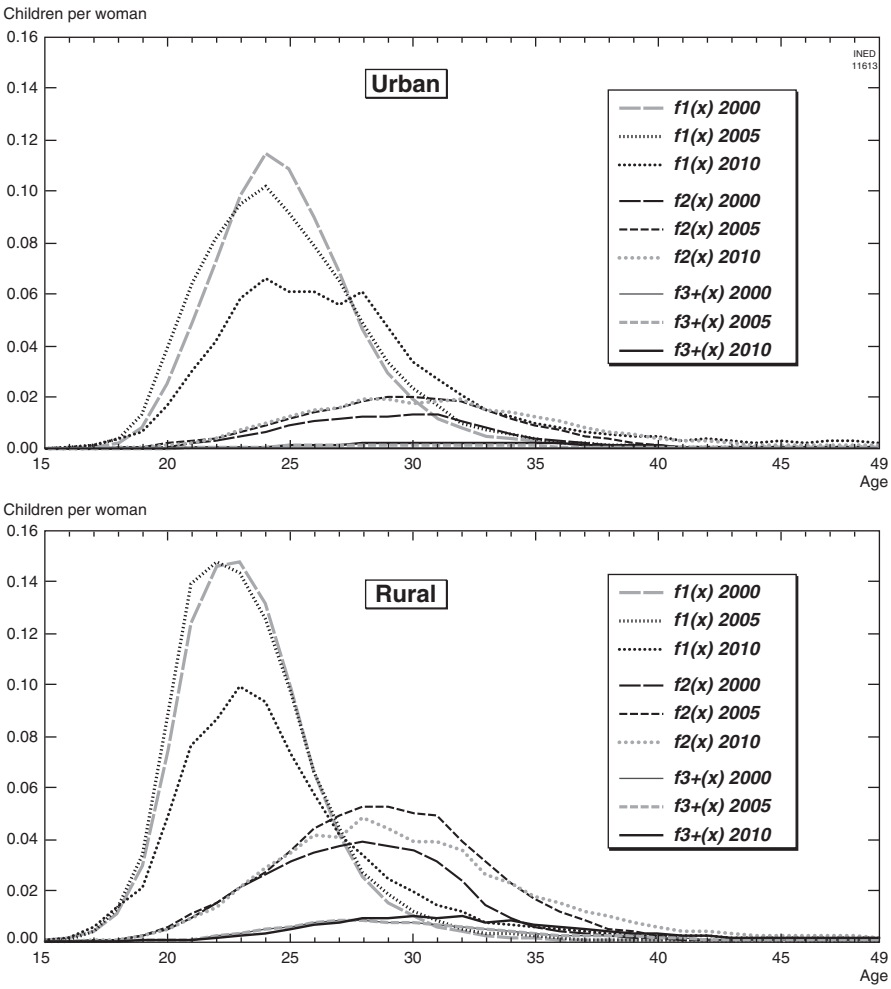



**Fig. 2.3.** Age-specific fertility rates in urban/rural areas by parity in 2000, 2005 and 2010 (Sources: PCO 2002, 2012; NBS 2007a)

indicates that more and more women are significantly postponing their childbearing to a later age.

### *2.4.3 Fertility Remains Stable Among the Migrant Population*

In China's socioeconomic context, the type of household registration (namely the *hukou*, which was originally linked with the place of residence: rural or urban) can significantly influence fertility behaviour, as fertility policy differs according to *hukou* status (i.e. agricultural/non-agricultural) (Gu et al. 2007). For example, the

**Table 2.3** Mean age at childbearing by birth parity, urban and rural, in 2000, 2005 and 2010

| Data source | Place of residence | Mean age at childbearing by parity | | |
|---|---|---|---|---|
| | | 1 | 2 | 3+ |
| 2010 census | Urban | 27.9 | 31.7 | 34.1 |
| | Rural | 25.3 | 30.3 | 33.0 |
| | China | 26.6 | 30.8 | 33.4 |
| 2005 nationwide 1% population sample survey | Urban | 25.5 | 30.4 | 32.0 |
| | Rural | 23.9 | 29.5 | 31.3 |
| | China | 24.6 | 29.8 | 31.6 |
| 2000 census | Urban | 25.5 | 29.9 | 31.6 |
| | Rural | 23.9 | 28.5 | 30.9 |
| | China | 24.5 | 28.8 | 31.1 |

Sources: PCO (2002, 2012); NBS (2007a)

one-child policy is generally applied to people with a non-agricultural *hukou,* while a variety of measures are applicable to couples with an agricultural *hukou*, depending on the local situation. But along with the economic reforms, large flows of people are moving from the countryside to urban areas where they become de facto urban residents but generally keep their agricultural *hukou*. A paradox is that this migrant population remains subject to the fertility policy as defined in their original place of residence, with generally less stringent requirements than for their urban counterparts. Therefore, the young migrant people who massively settle in urban areas are likely to raise urban fertility, especially TFR(2) and TFR(3+).

Some studies on China's migrant population indicate that the majority of them are young people of working age (Chen 2005; Chen and Wu 2006; Chen and Ye 2013), and who are therefore also in the peak ages for reproduction. In past years, they were repeatedly blamed for forming "guerrillas for unplanned births", i.e. for migrating in order to escape the local family planning regulations and have more births than allowed, since a significant share of these unplanned births are supposedly under-reported. Such situations are thus often taken as an argument for doubting the "unbelievably" low fertility revealed by population censuses and surveys. However, some studies (Chen 2005; Guo 2010a) have challenged this interpretation and shown that young migrants tend, in fact, to marry and have children at later ages and to have lower fertility than their non-migrant rural counterparts, namely those who are still living in their place of household registration. In particular, as migrants tend to be more educated than their rural non-migrant counterparts, and are therefore more in search of improved living standards and are more likely to adopt different lifestyles due to migration, this would imply that they are not necessarily more inclined to have additional children.

In fact, while the number of migrants is reaching new highs, their fertility appears to be very low. Table 2.4 provides TFR and parity-specific fertility rates by women's migration and residential status. It appears that among women with an agricultural *hukou*, non-migrant women have a higher TFR than migrant women:

**Table 2.4** Total fertility rates by place of residence and migration status, by birth parity

| | | Parity-specific fertility rates | | | |
|---|---|---|---|---|---|
| | Women's status | 1 | 2 | 3+ | TFR |
| 2010 census | Agricultural *hukou*, migrant | 0.76 | 0.35 | 0.06 | 1.17 |
| | Agricultural *hukou*, non-migrant | 0.70 | 0.54 | 0.13 | 1.37 |
| | Non-agricultural *hukou*, migrant | 0.81 | 0.17 | 0.03 | 1.02 |
| | Non-agricultural *hukou*, non-migrant | 0.69 | 0.13 | 0.02 | 0.84 |
| 2005 nationwide 1% population sample survey | Agricultural *hukou*, migrant | 0.84 | 0.30 | 0.05 | 1.19 |
| | Agricultural *hukou*, non-migrant | 1.01 | 0.54 | 0.09 | 1.64 |
| | Non-agricultural *hukou*, migrant | 0.80 | 0.13 | 0.01 | 0.94 |
| | Non-agricultural *hukou*, non-migrant | 0.80 | 0.09 | 0.01 | 0.90 |

Sources: PCO (2012); NBS (2007a)

1.37, and 1.17 respectively. The largest fertility decline between 2005 and 2010 is observed among non-migrant women with an agricultural *hukou*, from 1.64 in 2005 to 1.37 in 2010 (a decline of 0.27 points), while it remained stable at a low level among migrant women with an agricultural *hukou* (1.19 and 1.17 respectively). Again, this trend appears to be due mainly to the decline in the first-birth fertility rate (with a decrease of 0.32 points in the period).

## 2.5 The Reliability of the 2010 Census Data

The data presented above are taken from the 2010 census, without any statistical adjustment. The question now is to what extent the low fertility reported at the last censuses and surveys is due to under-reporting of births. Although this question cannot be answered with certainty given that no reliable alternative sources exist, there are currently more arguments supporting the hypothesis that these unadjusted data reflect the actual situation, than arguments against. The most convincing is without doubt the fact that almost all the recent data are consistent and give evidence of very low fertility in recent years. In particular, the estimates based on the 2000 and the 2010 censuses give very similar results for the second half of the 1990s. The trends reflected by the annual sample surveys on population change conducted by the NBS are also very consistent with the estimates based on the 2010 census for the 2000s (NBS 1990–2000).

Other arguments, which are not yet measurable, however, also confirm the relative accuracy of the most recent fertility data. First, since current birth control policy does not restrict first births, they are unlikely to be deliberately concealed by the parents. A decrease in the number of second and higher parity births, which are more likely to be out-of-plan and therefore under-reported, and in the corresponding parity-specific fertility rates, would support the assumption of underestimated overall fertility. However, it appears that while TFR(1) decreased slightly between 2000 and 2010, the fact that TFR(2) remained almost stable and that TFR(3+) even increased somewhat between 2000 and 2010, tend to support the opposite

assumption. Second, as stated above, the postponement of marriage and childbearing (see Table 2.3 and Fig. 2.3), which has become increasingly common in the recent years both for urban and rural women, and has resulted in increasing proportions of unmarried and childless young women, could in itself be sufficient to verify the low fertility assumption.

The reliability of the TFR reported at the 2010 census is also supported by another indicator: the reported number of children ever born. The period fertility rate (TFR) is regularly used as a proxy for lifetime fertility, with the assumption of a synthetic cohort. This indicator is helpful in practice, but only under the assumption of no change in childbearing patterns over the different cohorts involved. Should this assumption not be verified, such period fertility rates can significantly deviate from lifetime fertility rates, and therefore provide misleading interpretations. In such circumstances, it is better to resort to the average number of children ever born to women by age 50, i.e. after 35 years of childbearing history, which more precisely reflect actual lifetime fertility in a given cohort.

Figure 2.4 displays the average number of children ever born as reported by women aged 35–64 in 2010, i.e. born between 1946 and 1975, by age and type of household registration (agricultural/non-agricultural). As women over 35 years old have almost completed their fertility, their average number of children ever born can be considered as a reliable proxy for actual lifetime fertility. This figure gives further evidence of the drastic fertility decline in the younger cohorts. For women aged 64 in 2010, who were born in around 1946 and were in their peak ages for reproduction (20–25 years old) just before the implementation of the 3rd family planning campaign in 1971 (see Inset 2.2 pp. 19–21), the average number of children ever born (or completed fertility) is 2.8 (agricultural and non-agricultural *hukou*). But for women in the youngest cohorts (i.e. aged 35 in 2010 and born in around 1975), who started having children in the second half of the 1990s at a time when the fertility policy was still very strict, the average number of children ever born is slightly below 1.5. Although this figure cannot be considered as fully reflecting their completed fertility, it is likely to do so as the probability of further births in this age group is very low. This indicates that the lifetime fertility of this youngest cohort corresponds to the requirements of the current fertility policy, i.e. an average of 1.47 children per woman (Gu et al. 2007).

Despite significant variations in their average number of children ever born, a similar trend is observed among women with both agricultural and non-agricultural *hukou*. Women in the youngest cohort of the latter group have a very low number of children ever born in their lifetime: only 1.08 in 2010—a level consistent with the requirements of the "one-child" injunction to urban women. In comparison, women in the same birth cohort but with an agricultural *hukou* have had 1.66 children on average, which is still lower than the figure of 1.8 regularly cited as the actual TFR by Chinese officials.

Figure 2.5 provides a comparison between the average number of children ever born to women aged 35–39 at the time of successive population censuses and surveys, and the TFR in the corresponding census or survey years. It appears that the average number of children ever born dropped from 3.80 in 1982 (women born

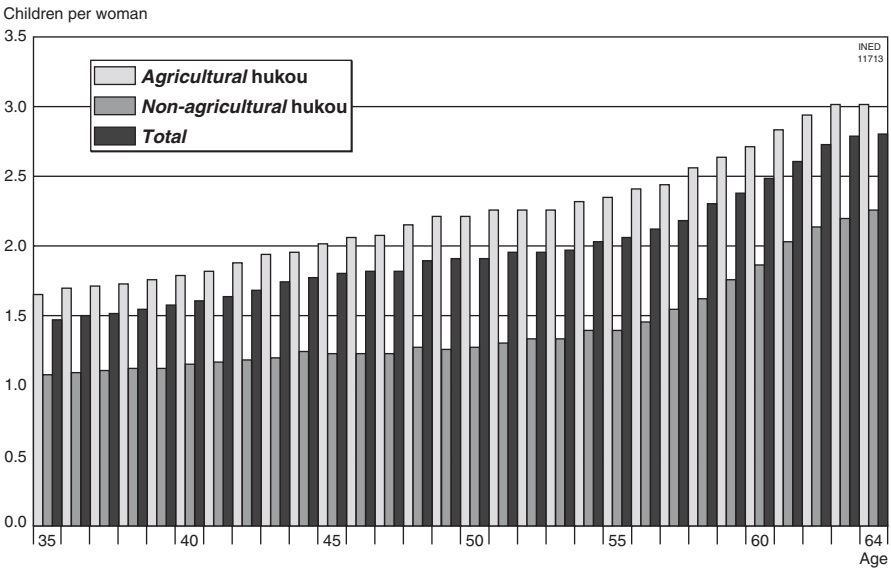



**Fig. 2.4.** Average number of children ever born by age of mother and type of household registration in 2010 (Source: PCO 2012)

in 1943–1947) to 1.52 in 2010 (women born in 1971–1975). Data indicate that lifetime fertility started to decline significantly in the cohorts born from the early 1960s, who reached their peak reproductive ages in the 1980s and the 1990s and whose reproductive life was therefore greatly affected by the family planning policy.

Figure 2.5 also indicates that the estimated completed fertility given by the average number of children ever born of women aged 35–39 at the successive censuses and surveys is systematically higher than the fertility level reflected by the period TFR, except at the 1990 census when the two indicators give very similar values. This systematic gap between TFR and completed fertility, the latter being recurrently higher than the TFR, tends to confirm the significant postponement of childbearing observed in the past two decades. It also, to some extent, invalidates the official figure for the TFR, given at 1.8 for recent years, since in order to be compatible with the reported number of children ever born, this comparatively high fertility level must necessarily be accompanied by earlier childbearing, which is not the case.

## Conclusion

This chapter addressed the patterns of China's current fertility using data drawn mainly from the 2010 population census. In spite of some remaining uncertainty concerning their accuracy, it appears that all the recent available sources of data nonetheless converge to indicate that China's fertility dropped below replacement

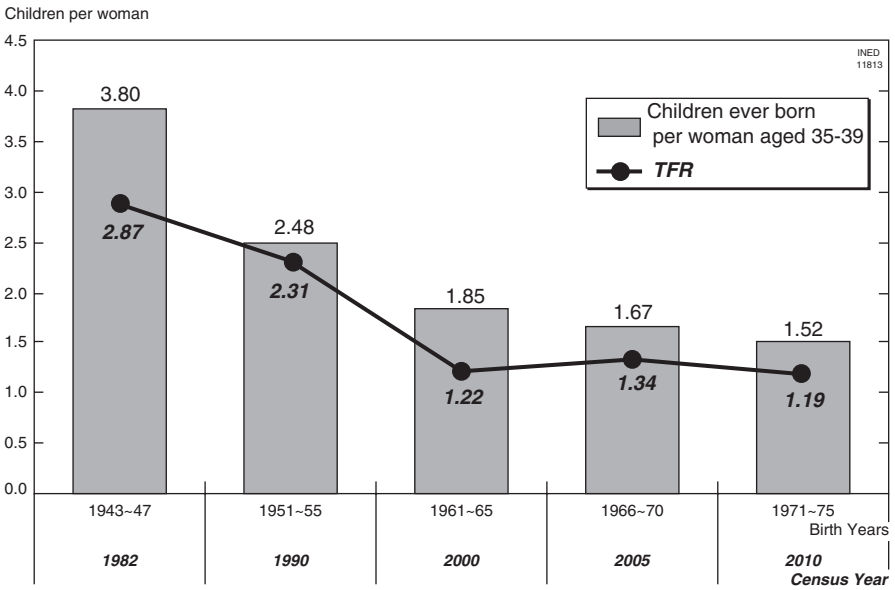



**Fig. 2.5.** Average number of children ever born to women by birth cohort and TFR in the corresponding census years (Sources: PCO 1985, 1993, 2002, 2012; NBS 2007a)

level in the early 1990s, and continued to decline in the 2000s. These converging data therefore challenge the official TFR of 1.8 children per woman, regularly used as a reference by Chinese officials.

However, such low fertility is quite plausible in China's current socioeconomic context, where the cost of raising children is increasingly high (in particular for education and health) and where young couples now prefer to have very few children so that they can offer them the best start in life (Attané 2011). But it is also supported by various cultural traits of Chinese society, also seen in some neighbouring populations such as Hong Kong, Singapore, South Korea, and Taiwan, where fertility decline was facilitated by a willingness to postpone marriage and "a receptivity to the voluntary limitation of higher-order births" associated with Confucian culture (Coale and Freedman 1993, p. 238). In today's China as in many other countries in the world, especially in Asia (Bongaarts 2001; Bongaarts 2002), various socioeconomic factors are obviously conducive to reducing fertility (Guo 2008; Guo 2010b; Morgan et al. 2009; Cai 2010). So it appears that the fertility desires of women of childbearing age have become much weaker after four decades of family planning policy (Zheng et al. 2009). The last two surveys conducted in 2001 and 2006 by the National Population and Family Planning Commission, for instance, indicate that the average ideal number of children for women of childbearing age is quite low, at about 1.7, a level even below that observed in many developed countries. This process of fertility decline is associated with an increasing tendency towards delayed childbearing in recent years. There is therefore a significant postponement effect on fertility, which is also widespread in other low-fertility populations and tends to re-

duce the TFR. Indeed, the Bongaarts and Feeney method (1998) applied to Chinese data indicates that the postponement effect reduced the annual TFR by about 0.2 points on average during the years 1995–2005 (Zhao and Guo 2010). Among other factors, the postponement of childbearing is made possible by the exceptionally high prevalence of contraceptive use in China (see Inset 2.3 and Table 2.5), especially the use of "long-term" methods that significantly reduce the risk of unwanted pregnancies.

To some extent, the traditional preference for sons—theoretically conducive to increased overall fertility, with couples giving birth to an additional child until they reach the ideal sex composition of their descent – and in particular the methods used to achieve this preference (namely, sex-selective abortion), unexpectedly plays in favour of a low fertility. As couples frequently resort to abortion to combine their sex-composition constraint with a family size constraint imposed by the family planning policy, this also tends to reduce the overall number of births and therefore the fertility level.

**Inset 2.3 Contraceptive Use and Reproductive Health**

Contraceptive use is part of the broader concept of reproductive health, in that it limits the number of pregnancies, and thus is expected to improve women's health. In China, contraceptive use is a legal obligation among couples of reproductive age, and only those who have permission to conceive a child are exempted. As a consequence, the contraceptive prevalence rate has reached exceptionally high levels, even higher than those observed in the most developed countries. In 1982, 70% of married women of reproductive age were using contraception, and this proportion reached almost 90% in 2008.

In theory, almost all existing contraception methods are available to Chinese couples. In practice, however, the intra-uterine device (IUD) (*qigong nei jieyu*) and female sterilization by tubal ligation (*shuluanguan jieza*), which are provided or performed free of charge in family planning centres or in hospitals after delivery, are overwhelmingly used. In fact, the wide prevalence of these so-called "long-term" methods (i.e. IUD and female sterilization) has long been part of a deliberate attempt by the government to generalize the most effective methods, whose use can be easily imposed and controlled (a woman can stop taking the pill without the consent of family planning cadres, while she cannot reverse sterilization or, in principle, remove the IUD without consulting a doctor) to meet the requirements of the birth control policy.

Couples using one of the so-called "short-efficiency" contraceptive methods (*duan xiao*), such as the pill or condoms, are therefore a small minority, representing less than 10% of the total number of users in 2008. Sterilization (male or female) and IUD are therefore the most widely used methods: 37% and 53% respectively in 2008, with the latter gradually gaining ground over other methods.

**I.A.**

**Table 2.5** Contraceptive use in 1982, 1992 and 2008

| | Contraceptive use, all methods (percentage of all married women of reproductive age) | Contraceptive use by method as a percentage of all users at the time of the survey, in 1982, 1992 and 2008 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Total | Tubal ligation | Vasec-tomy | IUD | Pill | Con-dom | Other |
| 1982 | 69.7 | 100.0 | 25.4 | 9.9 | 50.1 | 8.2 | 2.0 | 4.4 |
| 1992 | 83.4 | 100.0 | 41.7 | 11.8 | 40.1 | 3.8 | 1.8 | 0.9 |
| 2008 | 89.3 | 100.0 | 31.6 | 5.7 | 53.0 | 1.1 | 7.9 | 0.7 |

Sources: *Zhongguo renkou he jihua shengyu nianjian* (National Population and Family Planning Yearbook), (1982, 1992, and 2008), Beijing: Zhongguo renkou chubanshe

There is no doubt that the rapid social transformations taking place in China, along with the economic reforms, have changed individual behaviour in a direction that tends to reduce fertility (Cai 2010). Although most young Chinese persist in the belief that once they reach adulthood, men and women must marry and raise children, new ways of life are emerging and individualism is gaining ground, with a necessary impact on attitudes toward marriage and childbearing (Attané 2011). One aspect of these rapid social transformations conducive to low fertility is mass internal migration (with an estimated 220 million migrants in 2010, i.e. more than 15% of the total population), and the inherent urbanization process, both analysed later in this book. In fact, as stated above, a number of studies (Chen 2005; Chen and Wu 2006; Guo 2010a) suggest that rural migrants in cities tend to marry and give birth at later ages than their rural non-migrant counterparts, and therefore contribute to lower overall fertility.

In many respects, the official line whereby China has a total fertility rate of 1.8 children per woman becomes difficult to defend when considering the potential influence on fertility of the above-mentioned characteristics, although their impact is difficult to quantify.

## References

Attané, I. (2011). *Au pays des enfants rares. La Chine vers une catastrophe démographique*. Paris: Fayard.

Bongaarts, J. (2001). Fertility and reproductive preferences in post-transitional societies. In R. A. Bulatao & J. B. Casterline (Eds.), *Global fertility transition* (pp. 260–281). New York: Population Council.

Bongaarts, J. (2002). The end of fertility transition in the developed world. *Population and Development Review, 28*(3), 419–444.

Bongaarts, J., & Feeney, G. (1998). On the quantum and tempo of fertility. *Population and Development Review, 24*(2), 271–291.

Bongaarts, J., & Sobotka, T. (2012). A demographic explanation for the recent rise in european fertility. *Population and Development Review, 38*(1), 83–120.

Cai, Y. (2010). Social forces behind China's below replacement fertility: Government policy or socioeconomic development. *Population and Development Review, 36*(3), 419–653.

CCP. (1980). Zhonggong zhongyang fachu "guanyu kongzhi renkou zeng chang wenti zhi quanti gongchandang yuan, gongqingtuan yuan de gongkaixin" (Open Letter of the CPC Central Committee to the communist youth league on the problem of controlling population growth in China) (25 Sept 1980). http://news.xinhuanet.com/ziliao/2005-02/04/content_2547034.htm. Accessed 18 Dec 2013.

CCP and the State Council. (2000). Decision of the CPC Central Committee and State Council on the strengthening of population control and family planning to stabilize the low birth rate. (Zhonggong zhongyang guowuyuan guanyu jiaqiang renkou yu jihua shengyu gongzuo wending di shengyu shuiping de jueding). http://www.people.com.cn/GB/channel1/10/20000507/57005.html. Accessed 10 Nov 2013.

CCP and the State Council. (2006). Zhonggong zhongyang guowuyuan guanyu quanmian jiaqiang renkou he jihua shengyu gongzuo tongchou jiejue renkou wenti de jueding (Decision of the CPC Central Committee and State Council on the overall strengthening of population control and family planning to solve population problems). http://news.xinhuanet.com/politics/2007-01/22/content_5637713.htm. Accessed 17 Dec 2013.

Chen, W. (2005). Wailai renkou yu woguo chengshi di shengyu lü (In-migrants and low fertility in urban China). *Renkou yanjiu (Population Research), 4,* 79–83.

Chen, B., & Ye, Y. (2013). Zhongguo liudong renkou de zhuyao tezheng ji dui zhongguo chengshi hua de yingxiang (The main features of China's floating population and the impact on China's urbanization). *Chengshi wenti (Urban Problems), 213*(3), 2–8.

Chen, W., & Wu, L. (2006). Zhongguo renkou qianyi yu shengyu lü guanxi yanjiu (Research on the relationships between migration and fertility in China). *Renkou yanjiu (Population Research), 30*(1), 13–20.

Coale, A. J., & Freedman, R. (1993). Similarities in the fertility transition in China and three other east Asian populations. In R. Leete & I. Alam (Eds.), *The revolution in Asian fertility: Dimensions, causes, and implications* (pp. 208–238). Oxford: Clarendon Press.

Ding, J. (2003). Qian xi zhongguo 1991–2000 nian shengyu moshi bianhua dui shengyu shuiping de yingxiang (Analysis of the impact of changes in fertility pattern on fertility level in China between 1991 and 2000). *Renkou yanjiu (Population Research) 27*(2), 55–60.

Gu, B., Wang, F., Guo, Z., & Zhang, E. (2007). China's local and national fertility policies at the end of the twentieth century. *Population and Development Review, 33*(1), 129–147.

Guo, Z. (2008). Zhongguo de di shengyu shuiping ji qi yingxiang yinsu (China's low fertility and its determinants). *Renkou yanjiu (Population Research), 32*(4), 1–12.

Guo, Z. (2009). Jinnian shengyu lü xianzhu "huisheng" de youlai—dui 2006 nian quanguo renkou he jihua shengyu diaocha de pingjia yanjiu (On the fertility "rebound" in recent years: An evaluation of the 2006 national population and family planning survey. *Zhongguo renkou kexue (Chinese Journal of Population Science), 2,* 2–15. http://www.sachina.edu.cn/Htmldata/article/2009/04/1851.html. Accessed 18 Dec 2013.

Guo, Z. (2010a). Liudong renkou dui dangqian shengyu shuiping de yingxiang (Impact of floating population on current fertility in China). *Renkou yanjiu (Population Research), 34*(1), 19–29.

Guo, Z. (2010b). Zhongguo de di shengyu shuiping ji xiangguan renkou yanjiu wenti (China's low fertility and related population issues). http://www.nisd.cass.cn/news/624620.htm. Accessed 18 Dec 2013.

Guo, Z. (2011). 2010 Nian renkou pucha shuju zhiliang pinggu yiji dui yiwang renkou biandong fenxi jiaozheng (The sixth population census data indicates serious mistakes in past population estimation and projection). *Zhongguo renkou kexue (Chinese Journal of Population Science), 6,* 2–13. http://www.zgrkkx.com/Files/ywfxzz/MagazinePDF/c6b19776-625f-4794-8b88-13f87cdc0dfc.pdf. Accessed 18 Dec 2013.

Hu, J. (2012). Hujintao zai zhongguo gongchandang di shiba ci quanguo daibiao dahui shang de baogao (18th CCP National Congress Report). http://news.xinhuanet.com/18cpcnc/2012-11/17/c_113711665.htm. Accessed 17 Dec 2013.

Morgan, S. P., Guo, Z. G., & Hayford, S. R. (2009). China's below-replacement fertility: Recent trends and future prospects. *Population and Development Review, 35*(3), 605–629.

NBS. (1990–2010, annual). National Bureau of Statistics, Department of Population and Employment Statistics. *Zhongguo renkou he jiuye tongji nianjian 1990–2010 (China population and employment statistics yearbook)*. Beijing: Zhongguo tongji chubanshe.

NBS. (2007a). National Bureau of Statistics, Department of Population and Employment Statistics. *2005 Nian quanguo 1 % renkou chouyang diaocha shuju (Tabulation on the 2005 national 1 % Population Sample Survey)*. Beijing: Zhongguo tongji chubanshe.

NBS. (2007b). National Bureau of Statistics of China and East-West Centre. *Zhongguo gesheng shengyu lü guji: 1975-2000 (Fertility estimates for Chinese provinces: 1975–2000)*. Beijing: Zhongguo tongji chubanshe.

NBS. (2011). National Bureau of Statistics, Department of Population and Employment Statistics. *2010 Nian di liu ci quanguo renkou pucha zhuyao shuju gongbao (Major figures on 2010 population census of China)*. Beijing: Zhongguo tongji chubanshe.

NFPC. (2001). National Family Planning Commission of People's Republic of China. Quanguo 'shiwu' renkou yu jihua shengyu shiye fazhan guihua (National population and family planning development and planning for the 10th five-year plan). http://www.clner.com/Html/zhanlueyuzhengce/zhanlueguihua/zhuanxiangguihua/7078495133849.html. Accessed 12 Nov 2013.

NPDS. (2007). National Population Development Strategy Research Group. *Guojia renkou fazhan zhanlüe yanjiu baogao (Research report on China's national strategy on population development)*. Beijing: Zhongguo renkou chubanshe.

NPFPC. (2006). National Population and Family Planning Commission of People's Republic of China. Quanguo 'shiyiwu' renkou yu jihua shengyu shiye fazhan guihua (National population and family planning development and planning for the 11th Five-Year Plan). http://www.chinapop.gov.cn/ghjh/sygh/200807/t20080703_157294.html. Accessed 12 Sept 2013.

NPFPC. (2009). National Population and Family Planning Commission. *Renkou he jihua shengyu changyong shuju shouce 2008 (Handbook on frequently-used data on population and family planning in China 2008)*. Beijing: Zhongguo renkou chubanshe.

PCO. (1985). Population Census Office and National Bureau of Statistics of China. *Zhongguo 1982 nian renkou pucha ziliao (Tabulation on the 1982 Population Census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.

PCO. (1993). Population Census Office and National Bureau of Statistics of China. *Zhongguo 1990 nian renkou pucha ziliao (Tabulation on the 1990 Population Census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.

PCO. (2002). Population Census Office and National Bureau of Statistics of China. *Zhongguo 2000 nian renkou pucha ziliao (Tabulation on the 2000 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.

PCO. (2012). Population Census Office and National Bureau of Statistics of China. *Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.

Tao, T., & Zhang, X. (2013). Liu pu renkou shuju de lou bao yu chong bao (Underreporting and overreporting in China's sixth national population census). *Renkou yanjiu (Population Research), 37*(1), 42–53.

UN-WPP. (2012). United Nations. World population prospects. The 2012 revision. http://esa.un.org/wpp/unpp/panel_population.htm. Accessed 18 Dec 2013.

Wang, J., & Ge, Y. (2013). 2010 Nian renkou pucha shuju zhiliang pinggu yiji dui yiwang renkou biandong fenxi jiaozheng (Assessment of 2010 census data quality and past population changes). *Renkou yanjiu (Population Research), 37*(1), 22–33.

Wang, G., Hu, Y., & Zhang, L. (2013). *Zhongguo shengyu zhengce tiaozheng (Adjustment of family planning policy in china)*. Beijing: Sheke wenxian chubanshe.

Yang, F., & Zhao, M. (2013). 2000 Nian yilai zhongguo renkou shengyu shuiping de guji (A re-estimation of China's fertility level since 2000). *Renkou yanjiu (Population Research), 37*(2), 54–65.

Zhang, W. (2008). *2006 Nian quanguo renkou he jihua shengyu chouyang diaocha (Tabulations of the 2006 national population and family planning survey)*. Beijing: Zhongguo renkou chubanshe.

Zhao, Z., & Guo, Z. (2010). China's below replacement fertility: A further exploration. *Canadian Studies in Population, 37*(3–4), 525–562.

Zheng, Z., Cai, Y., Wang, F., & Gu, B. (2009). Below-replacement fertility and childbearing intention in Jiangsu province, China. *Asian Population Studies, 5*(3), 329–347.

Zhu, Q. (2012). 2000–2010 Nian zhongguo shengyu shuiping tuisuan—jiyu "liu pu" shuju de chubu yanjiu (Estimation of fertility level in China in 2000–2010: A preliminary study based on the 2010 Population Census Data). *Zhongguo renkou kexue (Chinese Journal of Population Science), 4,* 68–77.

Zhuang, Y., & Zhang, L. (2003). *1990 nian yilai zhongguo changyong renkou shuju ji (Basic data of China population since 1990)*. Beijing: Zhongguo renkou chubanshe.

# Chapter 3
# Changing Patterns of Marriage and Divorce in Today's China

**Jiehua Lu and Xiaofei Wang**

## 3.1 Introduction

In China, family remains the core of society, and marriage is still a constituent event in family formation. However, conjugal bonds have long been considered as secondary in comparison to other intra-family relationships, and became more valued only in recent years, especially after the reform and opening-up policy was launched in 1978. Traditionally, the family line perpetuates through the male descent (Pimentel 2000), and the function of marriage is primarily utilitarian: to bear children and enlarge the family. Thus, arranged marriage and virilocal residence prevailed for centuries, ensuring the reproduction of the extended family with little consideration for love within marital bonds (Pimentel 2000).

Some changes began to take place following the implementation of the 1950 Marriage Law, which among other provisions, prohibited bigamy and arranged marriage. But it was not until the early 1980s that more profound transformations occurred, with social change and economic transition increasingly influencing lifestyles and therefore the expectations related to marriage and personal achievement.

While marriage has long been universal in Chinese society, things are changing and there is a gradual diversification of marriage and family behaviours, in urban areas especially (Chambers 2012). Mate selection, and therefore the vast majority of marriages, is now the result of individual choice, and the role of parents in the mate-selection process is declining. However, marriage behaviours in China are still influenced by various individual factors, and vary between regions (Luo 1999; Xu and Cheng 2001; Ni 2008; Zhang 2008). Nevertheless, it is observed that overall, first marriage is increasingly delayed for both men and women, and that the proportion of unmarried people is growing, partly due to social changes brought about by globalization (Ju 2006; Yang and Yao 2007).

J. Lu (✉) · X. Wang
Department of Sociology, Peking University
Beijing, China
e-mail: lujiehua@pku.edu.cn

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_3, 

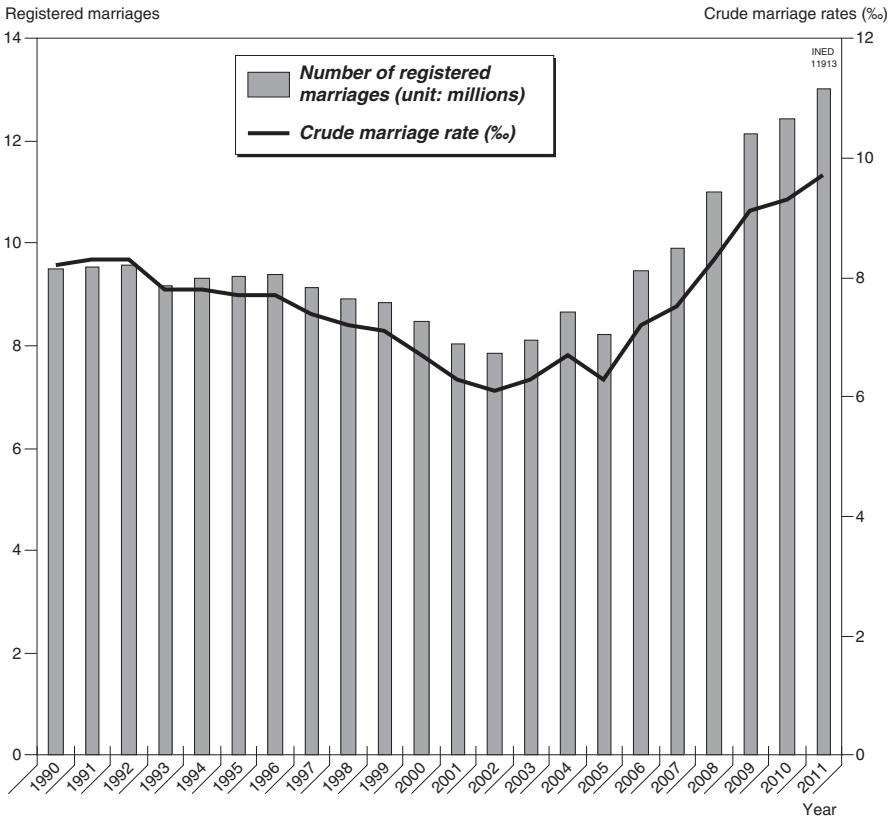



**Fig. 3.1** Registered marriages and crude marriage rates (1990–2011) (in millions) (Source: NBS 2012)

This chapter describes recent trends in marriage and divorce as evidenced by the latest population censuses and civil registration data. It highlights the generalization of marriage postponement in the youngest cohorts, with a focus on the fact that men remain single until later ages, on average, than women. In the last section, factors influencing marriage and divorce behaviours are discussed.

## 3.2 Trends in Marriage Number and Frequency

In China, marriage behaviours have undergone significant changes since the reform and opening-up policy was launched in 1978, and in particular in the most recent decade (2000–2010). As observed in some neighbouring countries (Jones 2007), the trend in China is toward delayed marriage, resulting in increasing proportions of unmarried men and women.

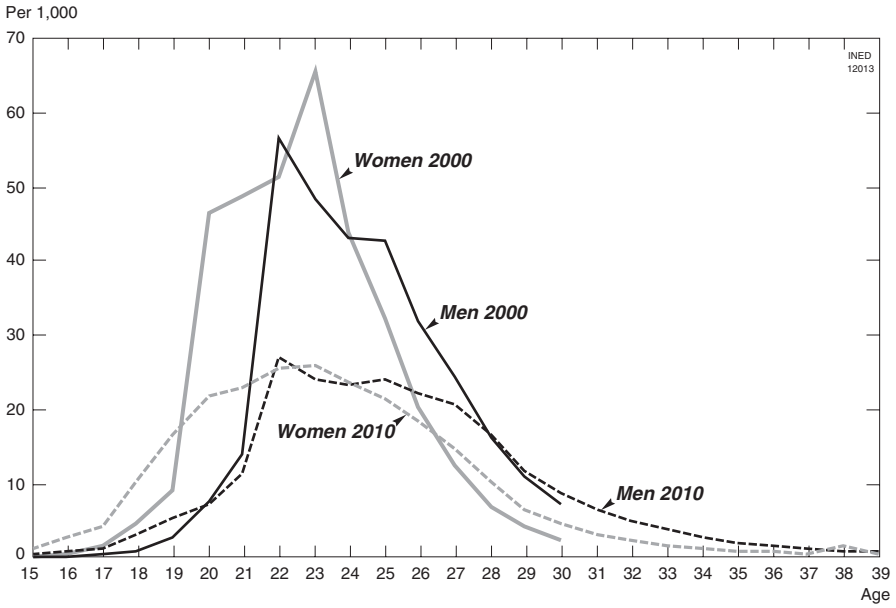



**Fig. 3.2** Age-specific marriage rates in 2000 and 2010 (Source: Authors' calculations based on PCO 2002 and PCO 2012)

Figure 3.1 shows that the number of marriages registered annually gradually declined between 1990 and 2002, from 9.51 million to 7.86 million. It then trended upward again, rising to 8.17 million in 2005 and then to 13.02 million in 2011. Meanwhile, the crude marriage rates[1] followed a similar trend, dropping from 8.2 per 1,000 in 1990 to 6.1 per 1,000 in 2002. The trend then reversed, reaching 9.7 per 1,000 in 2011, the highest rate observed in the past 20 years.

These fluctuations in the number of marriages and the crude marriage rates are due mainly to the changing size of cohorts entering the marriage market, in particular those born in the 1970s who reached the age of marriage in the early 1990s and whose size decreased year-on-year during the decade, followed by the increasingly large birth cohorts born in the 1980s, which reached the age of marriage in the early 2000s. But this increase in the absolute numbers of marriages in recent years does not translate into an increased marriage frequency, and conceals the actual trend toward a sustained postponement of marriage.

Indeed, the age-specific marriage rates (Fig. 3.2) indicate that marriage frequency declined significantly between 2000 and 2010, especially at the peak ages for marriage. For men and women aged 22–24 in particular, the rates more than halved during the decade, and this decline was, for women, only very partially offset by the slight increase observed at earlier ages (17–20 years) and later ages (27–30 years).

[1] Crude marriage rates are the number of marriages registered a given year divided by the total population in the middle of the same year.

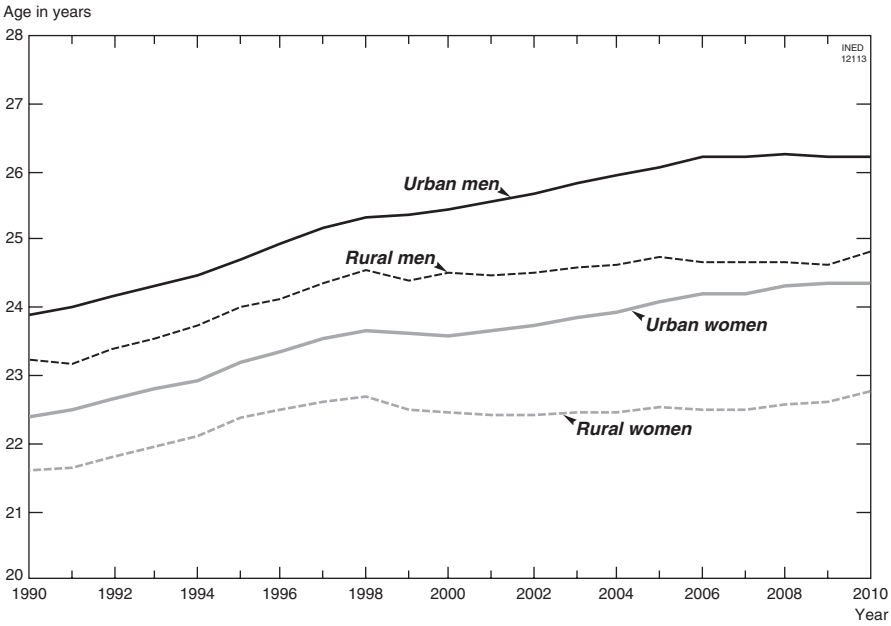



**Fig. 3.3** Mean age at first marriage by sex and place of residence 1990–2010 (Source: Authors' calculations based on PCO 2012)

## 3.3 Delayed Marriage for Both Men and Women

The past two decades have therefore seen a gradual increase in the mean age at first marriage, which gained 2 years between 1990 and 2010, from 22.8 to 24.9 year total number of people aged 6 s. The pace of increase was similar for both men and women. However, the increase was comparatively faster in the 1990s — when the Chinese government took action to promote late marriage, primarily through the refinement of provincial family planning regulations (Zhang and Gu 2007) — than in the 2000s.

It is noticeable, however, that marriage postponement was more pronounced in urban than in rural areas, and for men than for women (Fig. 3.3). In urban areas,[2] the mean age at first marriage increased by 2.3 years, from 23.9 to 26.2 years for men and by 2.0 years from 22.4 to 24.4 years for women between 1990 and 2010. Meanwhile, in rural areas it gained only 1.6 years (from 23.2 to 24.8 years) for men and 1.2 years (from 21.6 to 22.8 years) for women. The increase was steadier in urban areas over the whole period, while the mean age at first marriage started to level off in rural areas from the late 1990s. The gap in the mean age at first marriage

[2] Cities (*shi*) and towns (*zhen*) are merged here in a single category considered as urban areas. However, in the 2010 census, the data for mean age at first marriage are listed separately by cities, towns, and rural areas. In this chapter, the data for "urban areas" are the weighted average of the values for cities and towns.

between men and women and between urban and rural areas therefore gradually widened, especially from around 1998. While the average age gap between spouses was around 1.5 years in both urban and rural areas in 1990, it increased by 6 months, to reach around 2 years in 2010. Also, while the difference between urban and rural areas was almost negligible in 1990 (0.7 years for men and 0.8 years for women), it had doubled in 2010, to reach 1.4 and 1.6 years respectively, indicating that marriage behaviours are changing everywhere, but faster in urban than in rural areas.

## 3.4 Men Remain Unmarried Until Later Ages than Women

The postponement of marriage is also evident when looking at the age-specific proportions of never-married people (Fig. 3.4). The percentage of men and women who are still single increased significantly from 1995 to 2010, especially in the youngest cohorts. The proportion of men still unmarried in the 20–24 age cohort increased by 13.8 percentage points in these 15 years (from 68.6 to 82.4%), while the proportion of women still unmarried in this age group increased by 20.2 percentage points (from 47.4 to 67.6%). In the 25–29 age cohort, the share of unmarried men increased even more significantly, by 18.1 percentage points in the period (from 18.2 to 36.3%), versus 16.1 percentage points for women. However, in this age group, the percentage of unmarried women quadrupled in the period, from 5.5% in 1995 to 21.6% in 2010. This means that while almost all Chinese women were married before age 30 in 1995, one in four in this age group were still unmarried in 2010. This bears witness to the extremely fast changes that have taken place in China's marriage market in recent years.

In addition, the oldest never-married, i.e. those who are still single after age 30 — an age which has long been considered as a social threshold for marriage in China (Attané et al. 2013) — are increasingly numerous. The proportion of unmarried men in the 30–34 age cohort has doubled, rising from 6.2% in 1995 to 12.6% in 2010, while in the 35–39 age cohort, the proportion rose from 4.6 to 6.4% over the period. The phenomenon also exists among women, but is much less prevalent, with a proportion of never-married women in the 30–34 age group that rose from 0.8% in 1995 to 5.4% in 2010. In the 35–39 age cohort, it rose from 0.3 to 1.8% over the same period.

Another issue, however, is that more men than women remain unmarried until later ages, and that lifelong bachelorhood is mainly a male concern (Figs. 3.5 and 3.6). Indeed, men account for more than 75% of the never-married population above age 30, and exceed 90% by age 45. This reflects the impact of the marriage squeeze that characterizes China's adult male population (see Chap. 5. in this book), affecting men with little or no education especially (Attané et al. 2013). While men with secondary or higher education are almost universally married by age 40, 10% of those with a primary education level are still unmarried; this

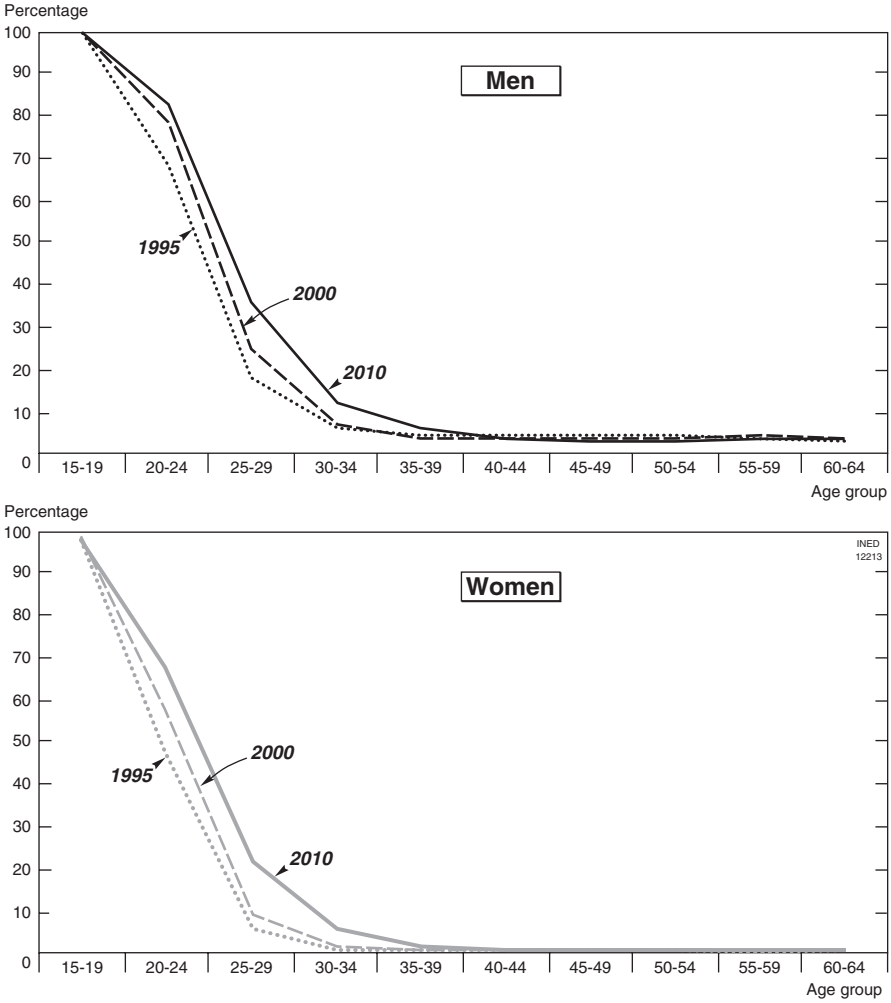



**Fig. 3.4** Percentages of unmarried men and women, by age, in 1995, 2000 and 2010 (Source: Authors' calculations based on NBS 2007, PCO 2002 and PCO 2012)

percentage even reaches 40% for those with no schooling (Fig. 3.5). Conversely, almost all women are married by age 35, whatever their educational level. It also appears that the higher the level of education, the less imbalanced the sex ratio of the unmarried. The only group with almost similar proportions of men and women is the group with higher education (Fig. 3.6), indicating that men who are able to provide women with better socioeconomic conditions all have access to marriage, which is far from being the case for the less advantaged socioeconomic groups (Attané et al. 2013).

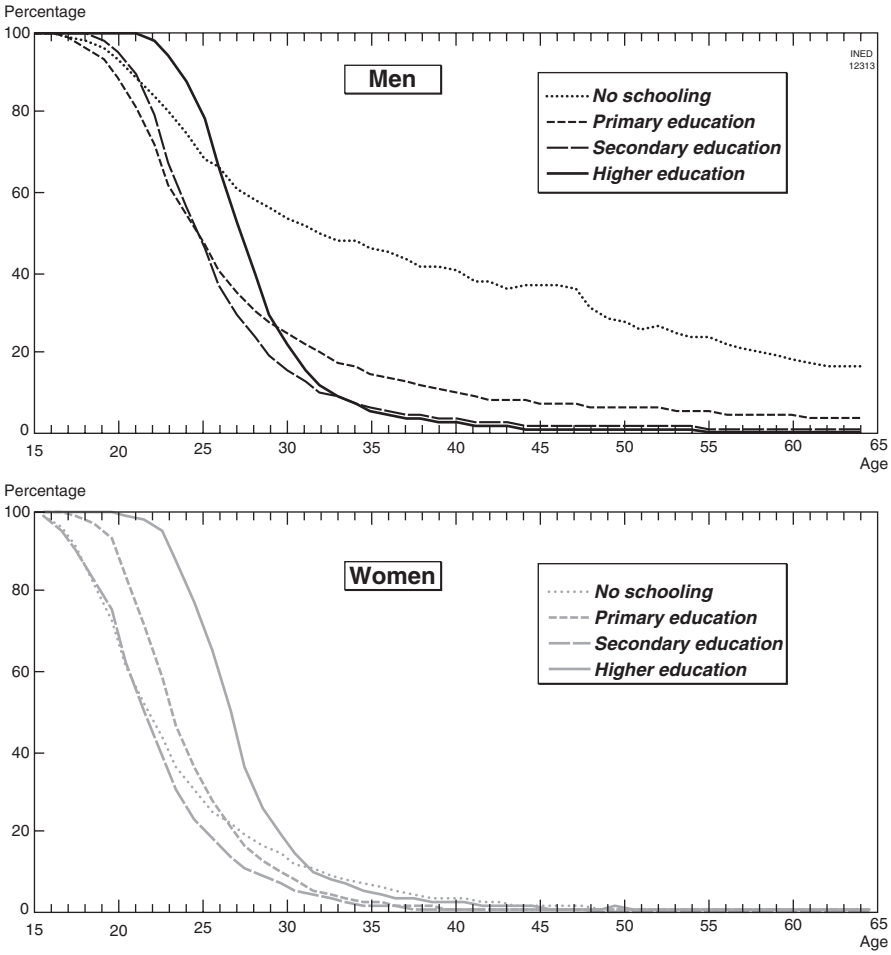



**Fig. 3.5** Percentage of never-married men and women by age and level of education (in 2010) (Source: Authors' calculations based on PCO 2012)

## 3.5 An Increase in Divorce

Changes in marriage behaviours are also observed when looking at divorce. In the decades preceding the reform and opening-up policy, divorce rates were very low in China compared to the world average (Platte 1988). However, rapid socioeconomic development is bringing change in its wake, and in recent years China has experienced a significant rise in divorce.

While the number of marriages has fluctuated in the two decades considered, mainly due to changes in the size of the cohorts involved, as stated above, the number of divorces and crude divorce rates have increased steadily, and the increase has even accelerated significantly from the early 2000s (Fig. 3.7). In the past 20 years,

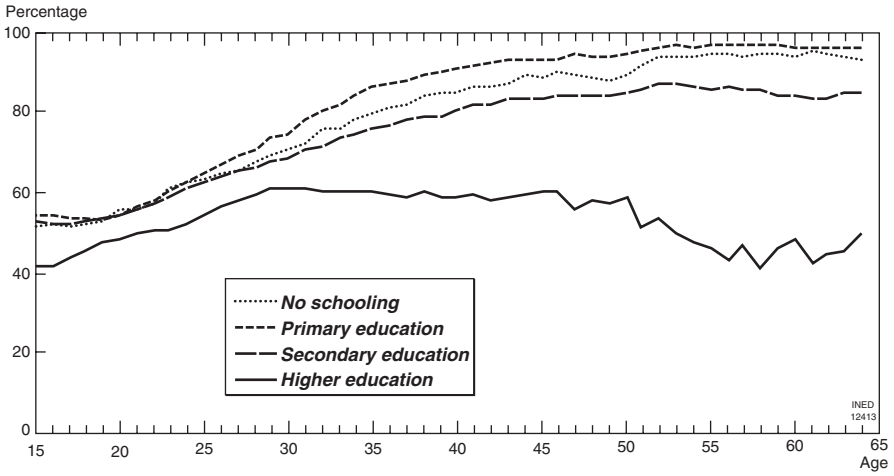



**Fig. 3.6** Proportions of men in the never-married population by age in 2010 (Source: Authors' calculations based on PCO 2012)

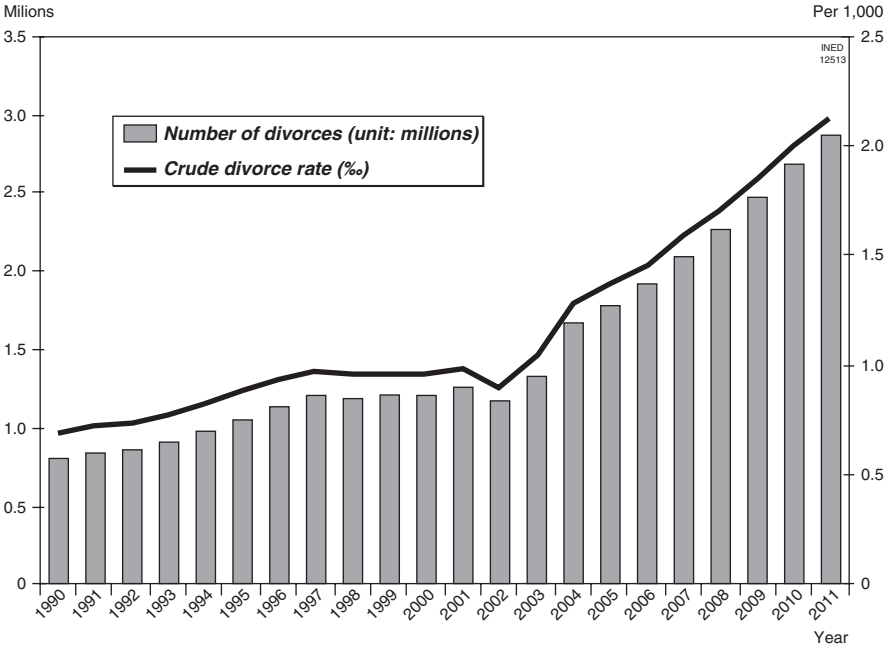



**Fig. 3.7** Registered divorces and crude divorce rates, 1990–2011 (Source: NBS 2012)

divorces have increased 3.5-fold, from 0.8 million in 1990, to 1.21 million in 2000, and then to 2.87 million in 2011. Following a similar trend, the crude divorce rates have risen steadily from 0.69 per 1,000 in 1990 to 2.13 per 1,000 in 2011, bearing witness to the social transformations that are affecting traditional values and the premium placed on marriage.

With the expansion of divorce, the proportion of divorcees who are not remarried[3] has increased significantly in the past two decades (Fig. 3.8), except in the youngest age cohorts in which fewer people are married — or if married, they have comparatively shorter marriage durations so are less exposed to the risk of divorce. For instance, at age 30, 1.2% of men and 0.6% of women were divorced in 1995. But by 2010, these percentages had reached 1.7 and 1.4% respectively. The increase was even more striking at later ages, with a doubling of the proportions of men divorced at ages 40–50, and a tripling or quadrupling for women. Changes are therefore particularly evident for women: while the median age of the divorced population increased by 2.7 years for men between 1995 and 2010 (from 39.1 to 41.8 years), it increased by 5.4 years for women (from 35.9 to 41.3 years).

However, despite significant change in marital behaviour in recent years, the overwhelming majority of Chinese people aged 30–60, both men and women, are married, even if men remain single until later ages on average, and are more frequently divorced and not remarried than women (Fig. 3.9).

## Discussion

Since the launch of its market-oriented economic reform in 1978, China has experienced rapid economic growth and significant socio-demographic changes, including changes in marriage and divorce patterns (Wang and Zhou 2010). The changes are twofold: first, marriage is increasingly delayed for both men and women, and, second, divorces are increasingly common. Indeed, while divorce rates were extremely low in China in the 1960s and 1970s, they have increased dramatically since then, in particular in the 2000s. Marriage and divorce patterns in China are therefore becoming increasingly similar to those in some neighbouring countries, where the fertility transition has been accompanied by a striking trend toward delayed marriage and, in many cases, a failure to marry at all (Jones 2007).

In China, these changes must be viewed in relation to various factors associated with the social liberalization that accompanied the economic reforms. For instance, the development of higher education and the subsequent increase in the average length of schooling in the youngest generations (see Chap. 4 in this book), tend to play in favour of marriage postponement. Also, China's rapid economic development in the past decades, with increased urbanization and rural-to-urban migration, has greatly altered people's aspirations and lifestyles (Zhang and Gu 2007).

[3] The 2010 census does not provide data on remarriage. Remarried people are therefore not statistically distinct from married people.

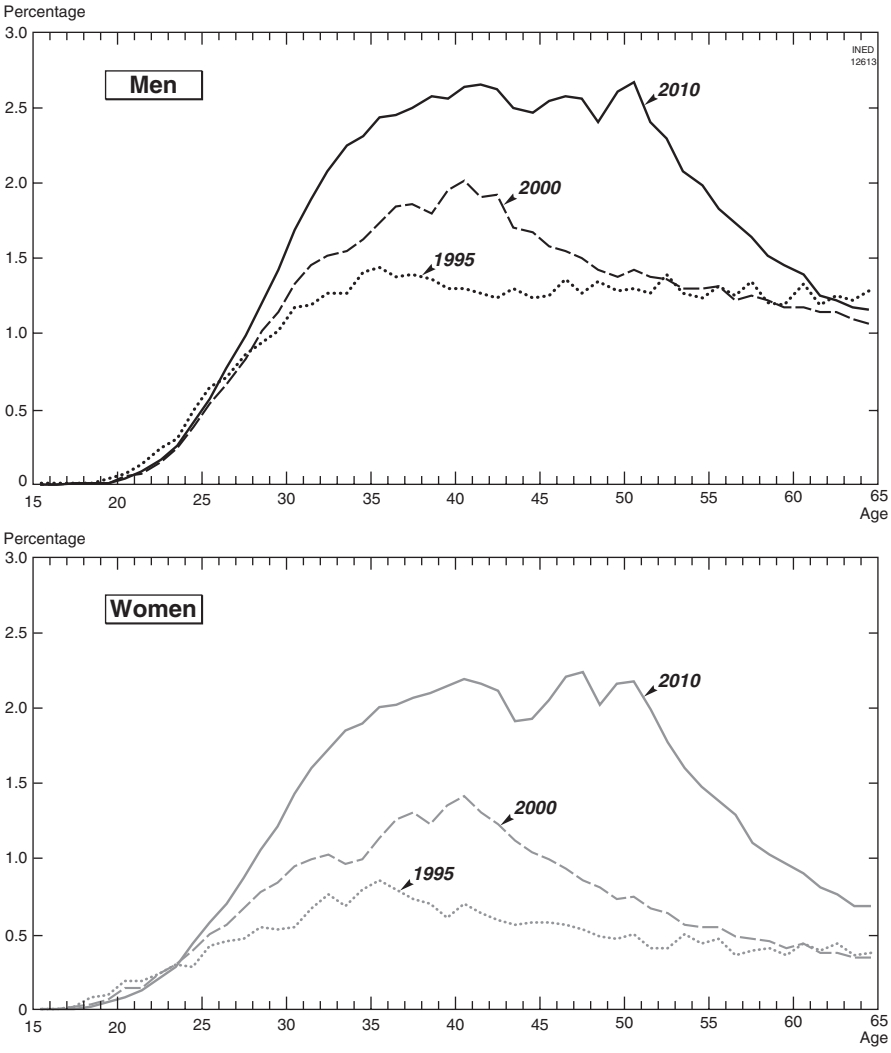



**Fig. 3.8** Percentages of men and women divorced and not remarried by age in 1995, 2000 and 2010 (Sources: Authors' calculations based on NBS 2007; PCO 2002 and PCO 2012)

As China's society is becoming increasingly competitive, young women and men, in urban areas especially, tend to be more self-centred and focused on their professional carrier than in the past and are therefore more likely to delay their marriage (Zhao 2008; Wang 2010; Cui 2011). More generally speaking, people are now giving increasing priority to their personal achievement and individual wellbeing, so marital dissolution is becoming a socially acceptable alternative when a marriage is no longer satisfying (Gao and Wu 2012). For instance, using data from surveys conducted in Shanghai, Shaanxi, and Hebei, Zeng et al. (2002) analysed the association

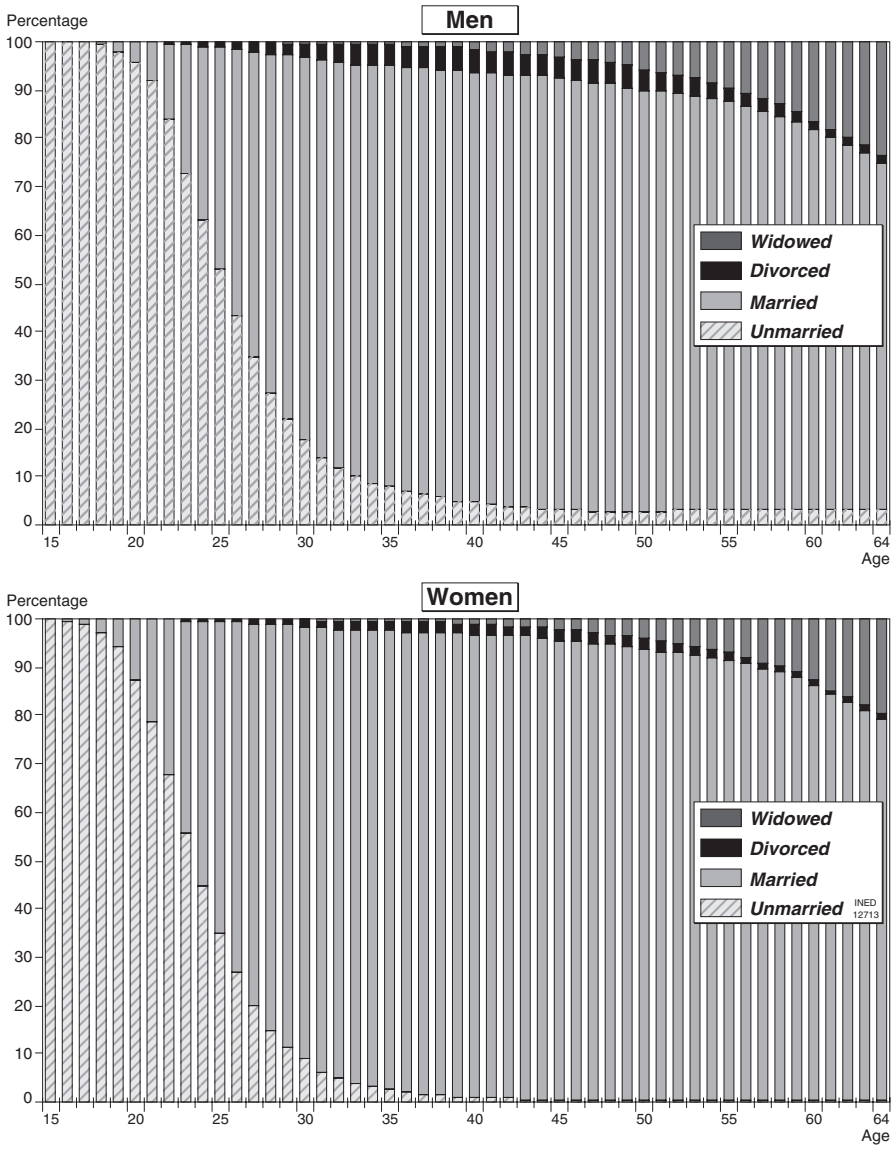



**Fig. 3.9** Distribution of men and women by age and marital status in 2010 (Sources: Authors' calculations based on PCO 2012)

between the risk of divorce and various socio-demographic factors. Interestingly, the study showed that the risk of divorce after an arranged marriage was about 2.6 times higher than for non-arranged marriages. It also demonstrated that the risk of divorce for women who had three or more daughters but no son was 2.2 times higher than that of women who had three or more children with at least one son,

indicating that the absence of a male heir in a context of strong preference for sons (see Chap. 5 in this book) can also be a justification for a divorce among Chinese men.

Another important issue underlying marriage postponement is the increasing overall cost of marriage. As most of these costs are borne by grooms and their family, young men often have to wait longer before saving enough to pay for their marriage, and these ruinous costs exert a heavy burden on young people and their family (Wang 2010). They include the wedding ceremony itself, the bride-price — a practice that remains prevalent in rural areas, but is now rare in urban China (Anderson 2007) –, and last but not least, the purchase of a house or an apartment that is becoming a pre-condition for attracting a potential wife in urban areas (Attané 2011).

On the whole, attitudes toward marriage and childbearing are changing (Wang 2010; Cui 2011). Chinese society is becoming more individualist and tolerant, with greater acceptance of divorce, in both laws and public attitudes, and of non-marital cohabitation (Wang and Zhou 2010; Zhao 2008). The wider range of inter-personal relationships and living arrangements in today's society is a sign that the concept of family is becoming more fluid and changeable (Chambers 2012).

## References

Anderson, S. (2007). The economics of dowry and bride price. *Journal of Economic Perspectives, 21*(4), 151–174.

Attané, I., Zhang, Q., Li, S., Yang, X., & Guilmoto, C. (2013). Bachelorhood and sexuality in a context of female shortage: Evidence from a survey in rural Anhui, China. *The China Quarterly, 215,* 703–726.

Attané, I. (2011). *Au pays des enfants rares. La Chine vers une catastrophe démographique*. Paris: Fayard.

Cui, X. (2011). Gaozhi daling weihun nüxing de hunlian wenti qian xi (A brief analysis of the marriage problems faced by the older unmarried women with higher education). *Xibei Renkou*, *32*(5), 58–62, 68.

Chambers, D. (2012). *A sociology of family life: Change and diversity in intimate relations*. Cambridge: Polity Press.

Gao, Y., & Wu, H. (2012). Renkou liu qian dui Beijing shi pingjun chuhun nianling de yingxiang (Impact of migration on the mean age at first marriage in Beijing). *Renkou Yanjiu* (*Population Research*), *36*(5), 58–68.

Gao, Y., Zhang, X., & Zhu, W. (2012). Beijing shi jinnian lihun shuiping yu nianling fenbu de biandong qushi fenxi (Study on change in the divorce rates and age distribution in Beijing in recent years). *Beijing Shehui Kexue (Beijing Social Sciences), 4,* 34–42.

Jones, G. (2007). Delayed marriage and very low fertility in Pacific Asia. *Population and Development Review, 33*(3), 453–478.

Ju, D. (2006). Quanqiu hua beijing xia zhongguo hunyin de bianqian yu zhanwang (China's marriage in the context of globalization: change and prospects). *Qujing shifan xueyuan xuebao (Journal of Qujing Normal University), 25,* 82–86.

Luo, P. (1999). Dangdai zhongguo hunyin zhuangkuang jiegou bianqian (Change in the structure by marital status in contemporary China). *Wuhan Daxue Xuebao (Journal of Wuhan University), 242*(3), 105–108.

NBS. (2012). *2012 China statistical yearbook*. Beijing: Zhongguo Tongji Chubanshe.

NBS. (2007). *2005 nian quanguo 1% renkou chouyang diaocha (Tabulation on the 2005 national 1% population sample survey)*. Beijing: China Statistics Press

Ni, X. (2008). Zhongguo dalu hunyin zhuangkuang bianqian ji hunyin ji ya wenti fenxi (Change in marriage patterns and analysis of the marriage squeeze in China). *Nanfang Renkou*, *23*(1), 58–64. http://www.genderstudy.cn/html/scholar/4109-1.htm. Accessed 4 Dec 2013.

PCO. (2002). *Zhongguo 2000 nian renkou pucha ziliao (Tabulation on the 2000 population census of the People's Republic of China)*. Beijing: China Statistics Press.

PCO. (2012) *Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 population census of the People's Republic of China)*. Beijing: China Statistics Press.

Pimentel, E. E. (2000). Just how do I love thee? Marital relations in Urban China. *Journal of Marriage and the Family, 62,* 32–47.

Platte, E. (1988). Divorce trends and patterns in China: Past and present. *Pacific Affairs, 61,* 428–445.

Wang, Z. (2010). Jiehun nianling zhi zhiyue xing tiaojian yanjiu-pingjun chuhun nianling weisheme tuichile? (Study on marriage: Why is the average age at first marriage postponed? *Xibei Renkou, 31,* 37–41. doi:10.3969/j.issn.1007-0672.2010.01.018.

Wang, Q., & Zhou, Q. (2010). China's divorce and remarriage rates: Trends and regional disparities. *Journal of Divorce and Remarriage*, *51*, 257–267. http://www.uvm.edu/~rsingle/JournalClub/papers/Wang+Zhou-2010-JDivorceAndRemarriage.pdf. Accessed 4 Dec 2013.

Xu, S., & Cheng, G. (2001). 90 Niandai zhongguo renkou hunyin zhuangkuang biandong fenxi (Changes in marital status of Chinese population since the 1990s). *Renkou Xuekan* (*Population Journal*), *1*, 52–53, 57. http://d.wanfangdata.com.cn/periodical_rkxk200101011.aspx. Accessed 4 Dec 2013.

Yang, C., & Yao, M. (2007). Liang zhong wailai wenhua sixiang yingxiang xia de zhongguo jindai hunyin bianqian (Changes in the perception of marriage in modern China). *Shaanxi Jiaoyu Xueyuan Xuebao* (*Journal of Shaanxi Institute of Education*), *23*, 56–59. http://wap.cnki.net/qikan-SHAA200703018.html. Accessed 4 Dec 2013.

Zeng, Y., Schultz, T. P., Wang, D., & Gu, D. (2002). Association of divorce with socio-demographic covariates in China, 1955-1985: Event history analysis based on data collected in Shanghai, Hebei, and Shaanxi. *Demographic Research, 7,* 407–432.

Zhang, G., & Gu, B. (2007). Recent changes in marriage patterns. In Zhao, Z. & Guo, F. *Transition and challenge. China's population at the beginning of the 21st century*. Oxford: Oxford University Press.

Zhang, Y. (2008). Zhongguo dangqian de hunyin taishi ji bianhua qushi (Current situation and change in marriage in today's China). *Hebei xuekan (Hebei Academic Journal)*, *28*, 6–12. http://d.wanfangdata.com.cn/Periodical_hbxk200803002.aspx. Accessed 4 Dec 2013.

Zhao, Z. (2008). Yingxiang woguo nüxing chuhun nianling biandong de yinsu (Factors influencing the age at first marriage of Chinese women). *Renkou yu jingji (Population & Economics), 1,* 32–34.

# Chapter 4
# Education in China: Uneven Progress

**Qiang Ren and Ping Zhu**

## 4.1 Introduction

Since China started reforming and opening up its economy in 1978, many efforts have been made to improve the development of education nationwide, with the underlying objective of promoting social and economic development. However, shortcomings remain in China's educational system, and enormous challenges still lie ahead for ongoing education development during the period of economic modernization. Compared with education in the more developed countries, Chinese education is still lagging behind. In 2010, the gross enrolment rate in higher education was 26 % while, for instance, that of U.S, Australia, Japan, and Finland were 52 %, 80 %, 60 %, 94 %, respectively (World Bank 2011). What's worse, educational inequity in regard to social and demographic factors such as region, sex, age, socioeconomic status, etc., are widespread. For example, according to the 2009 Chinese Education Yearbook (NBS 2010), the illiteracy rate among people aged 15 and above living in western regions was significantly higher than that of eastern regions, with the highest rate in Tibet (33.6 %) and the lowest in Beijing (2.6 %). Likewise, the overall illiteracy rate in urban areas is just 4.2 %, while that of rural areas is 9.8 %, with a rate of 10.6 % among rural females, 6.7 percentage points higher than that of rural males (3.9 %).

Education must be regarded as a basic human right rather than a privilege (Manuchehr 2010), and equity should receive priority in the allocation of educational resources at the national level and in the balance of education development. Meanwhile, as the concept of equity is increasingly considered as the moral standard and principal virtue of a social system, equity of education is receiving ever increasing attention from scholars and politicians. Further, numerous empirical studies have shown that educational inequity contributes to the widening income gap

Q. Ren (✉) · P. Zhu
Institute of Population Research, Peking University, Beijing, China
e-mail: renqiang@pku.edu.cn

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_4, 

(O'Neill 1995) which poses a serious threat to economic development and social stability (Lopez et al. 1998; Park 1996).

In this chapter, we will first use data on educational attainment and enrolment in China to show recent trends in education, focusing primarily on higher education and adult education. The profile of educational attainment[1] will then be viewed from the perspectives of age, sex, cohort, province, and the urban-rural divide. The implications for social development will then be discussed.

## 4.2 Key Role of Education

Education has long been considered as the prime indicator for evaluating human capital (Lutz et al. 2008; Sweetland 1996). Human capital investments generally include education, health and nutrition, the environment, employment, and political and economic freedom, among which education emerges as the basis for all the others (French and Bax 1998). Education is conducive to improving health and nutrition status, maintaining a high-quality environment, expanding and improving labour pools, as well as sustaining political and economic responsibility (French and Bax 1998; Schultz 1963). In addition, education can be measured empirically using quantitative indices such as dollar costs and years of tenure (Sweetland 1996). Therefore, education has become the benefit of choice for empirical analysis on human capital accumulation.

Just as human capital theory predicted that increased knowledge and skills would improve economic outcomes for both individuals and societies (Becker 1994), much empirical evidence has supported the claim that "education is an investment that can help foster economic growth" (Bottani 1996). Education does increase human production capacity (Schultz 1963) and individual income (Liu 2007), by way of enhancing knowledge and skills. Currently, the importance of higher education in promoting economic growth is attracting increasing attention (Huang and Li 2012). Education is also related to income distribution, and educational factors — higher educational attainment and more equal distribution of education — play a significant role in making income distribution more equal (Gregorio and Lee 2002). Recognizing these realities, decision-makers in most countries, including China, are making efforts to reform their education system and to improve overall education levels.

Apart from its effect on human capital and economic growth, education has various impacts. Both casual observations and systematic empirical findings confirm that education generally exerts a negative influence on fertility (Becker et al. 2013; Lutz and Samir 2011; Martin 1995). Improved education exposes women to modern values emphasizing individualism and gender egalitarianism (Inglehart and Norris 2003), and women's autonomy and economic independence enables them to decide for themselves how many children to have (Oppenheim Mason 1987). Moreover, better-educated women not only have higher rates of contraceptive use and earlier

[1] The "level of educational attainment" refers to the educational level that a person has attained, but not necessarily completed.

adoption of contraceptives, but are also more likely to rely on effective methods than low-educated women (Martin 1995). In the past few decades, China's total fertility rate (TFR) has fallen dramatically from 5.8 children per woman in 1970 to around 1.2 in 2010 (PCO 2012). This huge fertility decline could not have been achieved without the impetus of education reform (Lutz and Samir 2011). Conversely, fertility level may also have an impact on education. Evidence shows that the fertility decline in China is conducive to the elimination of gender inequality in education (Wu et al. 2012). For instance, the educational attainment of females with more siblings, younger siblings, or brothers in particular, is below that of females who are an only child or who have few siblings (Ye and Wu 2012).

At the individual level, education is positively associated with health (Johnson et al. 2011; Lutz and Samir 2011; Ross and Wu 1995), both directly and indirectly. In particular, better-educated people are more likely to be at lower risk of diseases and disability (Samir and Lentzner 2010; Liang et al. 2001; Molla et al. 2004; Schoeni et al. 2005), to report higher levels of perceived health (Cutler and Lleras-Muney 2006), and to have a longer life expectancy or lower mortality rate (Brown et al. 2012; Samir and Lentzner 2010; Kitagawa and Hauser 1973), than low-educated individuals. Studies have shown that education also enhances cognitive skills and the willingness to adopt behaviour less risky to life (Cutler and Lleras-Muney 2006). Regarding the mechanisms through which education correlates with health, Ross and Wu (1995) gave three explanations: firstly, well-educated respondents are more likely to work full-time, have a good job and high incomes, and are less likely to suffer from unemployment or economic hardship, which will in turn significantly improve health; secondly, the well-educated tend to have higher levels of social support and psychological resources, which are associated with good health; finally, a well-educated person is more likely to have a healthy lifestyle.

Studies also show that investment in education around the world is the most effective strategy for preparing to cope with the still uncertain dangers associated with future climate change (Striessnig et al. 2013).

## 4.3 Education History and Reform in China

From 1949 to 2013, education in China has gone through several periods of expansion and retrenchment, mirroring the transformation of the country's social policy, economy, and culture. Four historical periods can be distinguished.

The reform and development of the education system (1949–1965) began shortly after the founding of the People's Republic of China in 1949. Over this period, the state's primary goal of promoting economic development called for the mobilization of a large educated workforce, which greatly promoted the development of Chinese basic education. For instance, the number of colleges of tertiary education increased from 205 in 1949 to 434 in 1965 (Mao and Shen 1989). Overall, the direction of educational development was forward, though the growth rate declined somewhat in the last few years preceding the Cultural Revolution.

The Cultural Revolution (1966–1976) was a period of stagnation and shutdown in education (Cheng and Manning 2003; Deng and Treiman 1997). The ultimate goal of the Cultural Revolution was to break all institutional barriers between school and society. To achieve this goal, almost all institutions of secondary and higher education were shut down completely from 1966 to 1968. Most higher-education institutions remained closed until 1972 (Bernstein 1977; Unger 1982), and students and teachers were sent to work in farms and factories (Cheng and Manning 2003). Entrance examinations were also abolished. The number of colleges had fallen to 392 by 1976, and the number of college students decreased by 16% between 1965 and 1976 (Mao and Shen 1989).

The modernization policy (1977–1997) witnessed the revival and rapid development of Chinese education. Educational reform in China was rooted in the market-oriented economic reform of the 1970s (Hawkins 2000; Leung 2004). During this period, entrance examinations were reintroduced, first at the middle school level and then at the university level in 1977 (Unger 1982). China laid new foundations for its education system at all levels, the most impressive advance being the introduction of nine years of compulsory schooling throughout the country in 1986. Meanwhile, numerous technical schools, vocational colleges, and other types of adult training programmes were set up, opening the doors to the development of higher education (Zhou et al. 1998).

The boom in education (1998 to the present day) started with an expansion of the vocational and technical colleges and the development of world-class universities. With the process of globalization and China's entry into the WTO in 2001, Chinese education embraced a new era, with greater emphasis on educational equality. A series of important laws and documents were issued, such as "*Private Education Promotion Law of the People's Republic of China* (*Zhonghua renmin gongheguo minban jiaoyu cujin fa*)" (2002), "*From a Country with a Large Population to a Country with Sound Human Resources* (*Cong renkou da guo mai xiang renli ziben qiang guo*)" (2003), etc. Thanks to the tireless efforts of the Chinese government, and in order to meet the Millennium Development Goal of universal primary education, educational reform has made remarkable progress with regard to elimination of illiteracy, school enrolment and educational attainment at all levels.[2] Nine-year compulsory education is now practically universal in China, with a net primary

[2] Primary education (*xiaoxue*) consists of a cycle of six years, starting at age 6 or 7 up to age 12. Secondary education is divided into two cycles: middle school (*chuzhong*) and high school (*gaozhong*). Each cycle includes three years of schooling, but only the first cycle (*chuzhong*) is part of compulsory education (nine years in total, i.e. six in primary school, three in the first cycle of secondary school). In high-school education (*gaozhong*), three types of curriculum are available: general education (*putong zhongdeng xuexiao*), vocational programmes (*zhiye zhongzhuan*) and technical education (*jishu xuexiao*). Higher education (*gaodeng jiaoyu*) in colleges and universities includes vocational (*daxue zhuanke*, or *dazhuan*) and general education (*daxue benke*) curricula. In China, primary school is generally from ages 6 to 11, middle school from ages 12 to 14, high school from ages 15 to 17, 3-year college from ages 18 to 20, 4-year college from ages 18 to 21, and master's level graduate education (*yanjiusheng*) from ages 22 to 25.

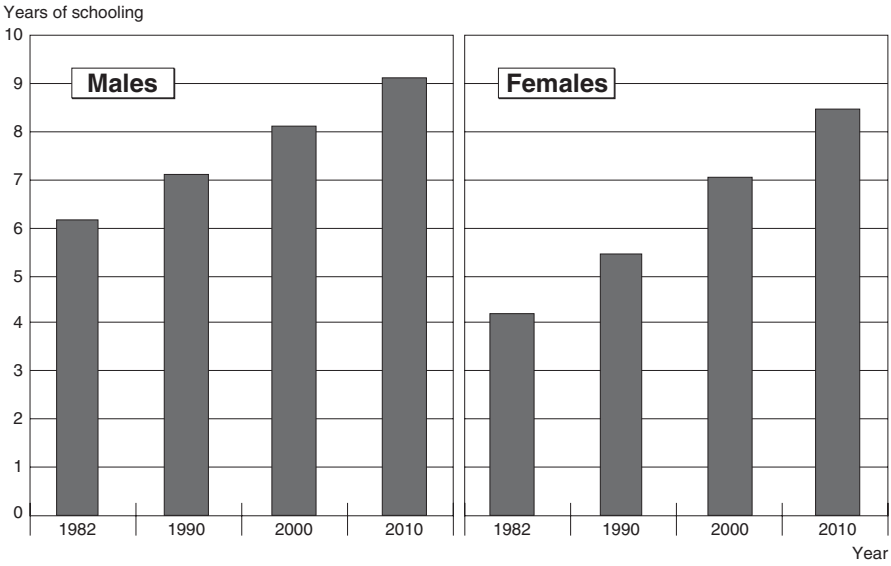



**Fig. 4.1** Average years of schooling* for males and females, ages 6 and above, 1982–2010. (*Average years of schooling = Σ Number of people who received α education the number of years needed to complete α education) × (the total number of people aged 6 years and above). Here, the number of years needed to complete a given level of education are the following: 6 years for primary school (*xiaoxue*), 9 years for middle school (*chuzhong*), 12 years for high school (*gaozhong*), 15 years for 3-year college degree (*dazhuan*), 16 years for 4-year college degree (*daxue*) and 19 years for master's level graduate education (*yanjiusheng*). (Source: authors' calculations based on China population censuses PCO 1985; PCO 1993; PCO 2002 and PCO 2012)

level enrolment rate of 99.7% in 2010.[3] The gross enrolment rate at secondary level has reached 100%, and higher education enrolment 26.5% (MOE 2011). The average years of school attendance increased by two years between 1990 and 2000, from 5.5 to 7.1 years (Fig. 4.1), and then again by more than two years, to reach almost 9 years in 2010. The rapid expansion of mass universities has resulted in higher entrance rates. Between 1999 and 2003, the number of students enrolled in higher education increased from 1.6 to 3.8 million.

However, these results can hardly be considered as "qualitative development", but rather as "quantitative growth", since huge educational inequality still prevails.

[3] The net enrolment rate at a given educational level is defined as the enrolment of the official age group for a given level of education expressed as a percentage of the corresponding population. The gross enrolment rate corresponds to the total enrolment within a country in a specific level of education, regardless of age, and is expressed as a percentage of the population in the official age group corresponding to this level of education. For instance, net enrolment rate in primary education = total number of students of primary school age that attend primary schools (adults excluded)/ total number of children of primary school age. The gross enrolment rate in primary education = total number of students that attend primary schools (adults excluded)/ total number of children of primary school age.

**Table 4.1** Percentage distribution of population aged 6 and over with at least a primary school educational level in the eight major ethnic groups, by level of attainment and by ethnic group (1990 and 2010)

| | Primary school | | Secondary school | | Higher education | | Total | |
|---|---|---|---|---|---|---|---|---|
| | 1990 | 2010 | 1990 | 2010 | 1990 | 2010 | 1990 | 2010 |
| Han | 52.6 | 29.2 | 45.4 | 60.6 | 2.0 | 10.2 | 100.0 | 100.0 |
| Zhuang | 65.8 | 38.0 | 33.3 | 56.1 | 0.8 | 5.9 | 100.0 | 100.0 |
| Man | 49.8 | 27.9 | 48.1 | 60.5 | 2.2 | 11.6 | 100.0 | 100.0 |
| Hui | 49.8 | 39.0 | 47.6 | 50.8 | 2.6 | 10.2 | 100.0 | 100.0 |
| Miao | 71.1 | 51.3 | 28.2 | 43.8 | 0.8 | 4.9 | 100.0 | 100.0 |
| Uighurs | 70.7 | 43.1 | 27.9 | 50.3 | 1.5 | 6.6 | 100.0 | 100.0 |
| Yi | 76.0 | 62.8 | 23.5 | 32.8 | 0.6 | 4.4 | 100.0 | 100.0 |
| Mongols | 50.9 | 29.7 | 46.5 | 55.6 | 2.7 | 14.7 | 100.0 | 100.0 |
| Tibetans | 73.3 | 66.1 | 25.0 | 26.0 | 1.7 | 7.9 | 100.0 | 100.0 |

Sources: China's corresponding population censuses (PCO 1993; PCO 2012)

With the emphasis on equity in every aspect of modern life, increasing attention has been given to the issues of educational inequality in China. The mid-1980s reforms introduced the decentralization of funding and administration, and liberalized the management of the school system. These initiatives have been largely positive, especially for the generalization of basic education and the increase in the average duration of education. However they have also contributed to increasing inequalities in access to education. As local governments are now responsible for raising funds for the primary sector in addition to the budget allocated by the state, the richest regions have a greater financial capacity to improve the education supply, while the poorest regions sometimes do not even have enough money to maintain schools and pay teachers.

Sun and Qi (2007), for instance, pointed out that educational inequality between the different ethnic groups has widened (Table 4.1), although the level of inequality within each ethnic group has been reduced and average years of school attendance have increased.

Regarding expenditure for education, there are disparities between the provinces. In the Eastern part of the country, provincial governments tend to allocate a greater part of their public expenditure to education than inland (i.e. central and western) provinces (Zhang et al. 2007). As is the case for educational attainment and enrolment, there are also large disparities between rural and urban populations (UNDP 2005; World Bank 2006; Zhang et al. 2007), as shown below. Qian and Smyth (2008) found that the major factor behind the regional inequality in educational enrolment and achievement in China is the widening rural-urban gap rather than the gap between coastal and inland provinces. Rural areas and some inland provinces are burdened with many disadvantages, such as a serious shortage of education funding, a poor teaching environment, limited teaching facilities and too few teachers, dangerous school buildings, etc. Last but not least, marked differences still exist between Chinese women and men (Fig. 4.1), with much higher female illiteracy and semi-literacy rates than those of men (UNDP 2005; World Bank 2006). Moreover, the educational status of females and males also differs in the number of

years of school attendance, type of educational enrolment and dropout rates (World Bank 2006). Gender inequality in educational attainment is also associated with geographical location, urban areas being much more advantaged than most of the rural areas (Cheng 2009; Zeng et al. 2013). Urban-rural disparities, the east-west divide and gender inequalities are the three main dimensions of inequality in Chinese education (Cheng 2009), as discussed below.

In addition, China's urbanization and economic development have been accompanied by mass migration; the total number of internal migrants exceeded 200 million in the late 2000s (NPFPC 2010). Consequently, there are growing numbers of migrant children and of children left behind in rural areas by parents seeking urban employment. According to the most recent data from 2010, there are about 70 million left-behind children with one or two migrant parents (representing around 25% of all Chinese children), 88% of whom are from rural areas (Duan et al. 2013).[4] Studies have shown that the educational attainment of these left-behind children is significantly lower than that of rural children with non-migrant parents (Meyerhoefer and Chen 2011). In 2005, 18 million children below age 15 were living with their migrant parents (Duan and Huang 2012) and in 2010, the number was 38 million, this time for children below age 18 (Duan 2012). Clearly, part of the increase is due to the wider age range reported for 2010 (up to age 18 years), but it is also probable that the proportion of Chinese children living with migrant parents increased over the 5-year period. Migrant children experience difficulties in gaining access to an appropriate education (Hu and Szente, 2010). Compared with local children, migrant children (also known as the "floating population") are much less likely to be enrolled in public schools (Chen and Feng 2012; Liang and Chen 2007). This is because most migrant children are not entitled to free primary or secondary schooling in urban areas, and must pay many times the fees normally charged to urban residents, even though China has implemented compulsory education (Kwong 2004; Zhao 1999). The residential registration, or *hukou*, system in China is a major contributing factor to the limited educational attainment among the children of migrant parents (Montgomery 2012; Wang 2004), so the central government needs to accelerate the reform of the *hukou* system and devote more funding to urban and rural schools.

The central government of China does not provide adequate financial support for education. National education expenditure in China is much lower than in other OECD countries. In 2008, the OECD countries as a whole spent 6.2% of their collective GDP on educational institutions at the pre-primary, primary, secondary and higher levels (OECD 2008), compared with just 3.5% (MOE 2009) in China. As China still has the world's largest population, per capita educational expenditure is, in fact, among the lowest in the world.

[4] Chan (2009, p. 8) reports data from the 2005 1% sample census showing that 47% of left-behind children lived with one parent, usually the mother; 26% with one or both grandparents; and 27% with others or alone.

## 4.4 Trajectories in China's Educational Development

### *4.4.1 Trends in Educational Attainment*

Since the founding of the People's Republic of China in 1949, an important goal has been to eliminate illiteracy and implement compulsory education. At present, the national net enrolment rate in primary schools is about 99%, and the gross enrolment rate in middle schools has reached 90%, while illiteracy among the young (ages 15–44) and middle-aged population (ages 45–59) has decreased to less than 5%. Nine-year compulsory education is now practically universal among the youngest cohorts, and the gender gap in education attainment has been substantially narrowed. In the past ten years, education has been developing rapidly in China, especially higher education and adult vocational degrees such as MBA (Master of Business Administration), EMBA (Employed Master of Business Administration) and MPA (Master of Public Administration).

Figs. 4.1 and 4.2 show that the Chinese population has greatly benefited from societal changes, and levels of education have improved remarkably. The gender gap in education attainment has been steadily narrowing over the past three decades, although women still have not caught up with men.

The average duration of school attendance among persons aged 6 and above has increased steadily to reach 8.7 years in 2010 (Fig 4.1). Women's average years of education have increased much faster than those of men, reaching 8.4 years by 2010 versus just 4.2 years in 1982. For men, years in education increased from 6.1 years to 9.1 years over the same period. Consequently, the gap between men and women is narrowing, from 1.9 years in 1982 to 0.7 years in 2010.

Over the same period, the composition of educational attainment has undergone dramatic changes. Whereas in 1982 32.2% of the population aged 6 and above had received no education, this figure had fallen to 20.6% in 1990, to 9.5% in 2000 and to just 5.3% in 2010. The proportion of people with primary educational attainment rose from 39.9% in 1982 to 42.3% in 1990, but started to fall in the following years (38.2% in 2000; 28.5% in 2010) because a growing number of people completed higher education levels (middle school, high school, and above). Overall, persons with middle-school education represented 41.7% of the total population aged 6 years and over in 2010, and high-school education is developing steadily. The development of higher education, i.e. education at college level and above, is also quite promising. While merely 0.9% of the population had completed higher education in 1982, that figure had risen to 9.5% in 2010.

Similar trends of educational development have been seen for both men and women (Fig. 4.2). However, at middle-school levels and lower, there is a marked difference in the extent of change between them. The proportion of women with no education decreased by nearly 37 percentage points during the period 1982–2010, while that of men with no education, which was significantly lower than that of women in 1982, dropped by just 18 points. The proportions of men with just primary education fell from 44.8% in 1982 to 26.4% in 2010, while for women

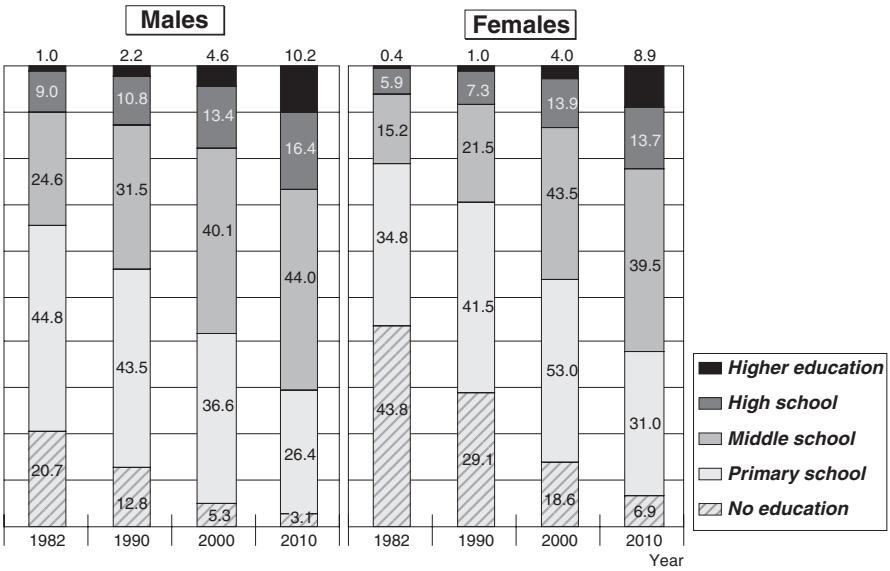



**Fig. 4.2** Percentage of educational attainment, ages 6 and above, 1982–2010 (Source: Authors' calculations based on China population censuses PCO 1985; PCO 1993; PCO 2002; PCO 2012)

it fell from 34.8 to 31.0%. The proportion of women with middle-school education increased by 24.3 percentage points, 5 points more than for men, as men have higher educational attainment overall. By comparison, the changes in level of high-school education or higher over the period are smaller, and more similar for both men and women.

### *4.4.2 Trends in School Enrolment*

The number of students enrolled in higher education has greatly increased during the past decade, while primary school enrolment has fallen in absolute numbers due to the decreasing size of the cohorts born from the 1980s. Before 2004, the number of secondary school students increased from 54 to 112 million, and then stabilized at 100 million after 2004. The number of children enrolled in primary school decreased continuously after 1997, and secondary school enrolment has remained stable in recent years. In 1987, there were only about 2 million students enrolled in higher education, but by 2011 the number has risen to 36 million. It is noticeable, however, that the changes in the population age structure by educational level are also partly the consequence of changes in the total population resulting from lower fertility in recent decades.

Furthermore, the trend toward greater gender equality in school enrolment is evident in the youngest generations, especially in higher education (Fig. 4.3). Female students enrolled in universities only accounted for 33.0% of total enrolments

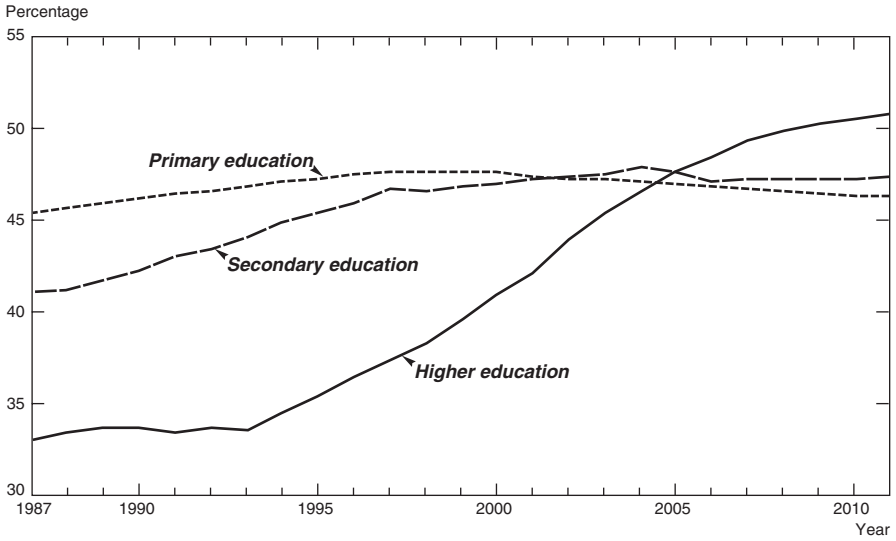



**Fig. 4.3** Percentage of girls in total student enrolments in primary, secondary, and higher education, 1987–2011 (Authors' calculations based on MOE 2011)

in 1987, but the proportion rose to 50.8% in 2011, thus slightly exceeding that of males. During the period 1987–1993, the figure remained stable at around 33–34%. However, a turning point occurred in 1993, when the proportion of female students started to rise, exhibiting a linear growth rate of 1.5% per year until 2007. Growth then began to slow down. In 2009, the number of female students surpassed that of male students in universities for the first time, which is a significant landmark for the development of gender equality in Chinese education. For primary and secondary school enrolments, the percentage of female students did not change so radically, although proportions have increased to a certain extent. Even so, the figures were and are still slightly below 50%. In particular, the percentage of female students enrolled in primary schools is relatively stable, at around 45%. After a slow rise from 1987 to 1998, the figure fell steadily to 46% in 2011. By contrast, a significant increase was seen in the percentage of female students enrolled in secondary schools before 1997, from 41% in 1987 to 47% in 1997. After 1997, the proportion also stabilized.

### *4.4.3 Changes in Age-Sex Structure*

Age and sex are considered to be the most fundamental demographic factors because the age-sex structure of the population matters for society and for the economy. Recently, demographers have started to add the level of education as a third dimension for the same reasons (e.g. Lutz et al. 2008). Based on the census data, we

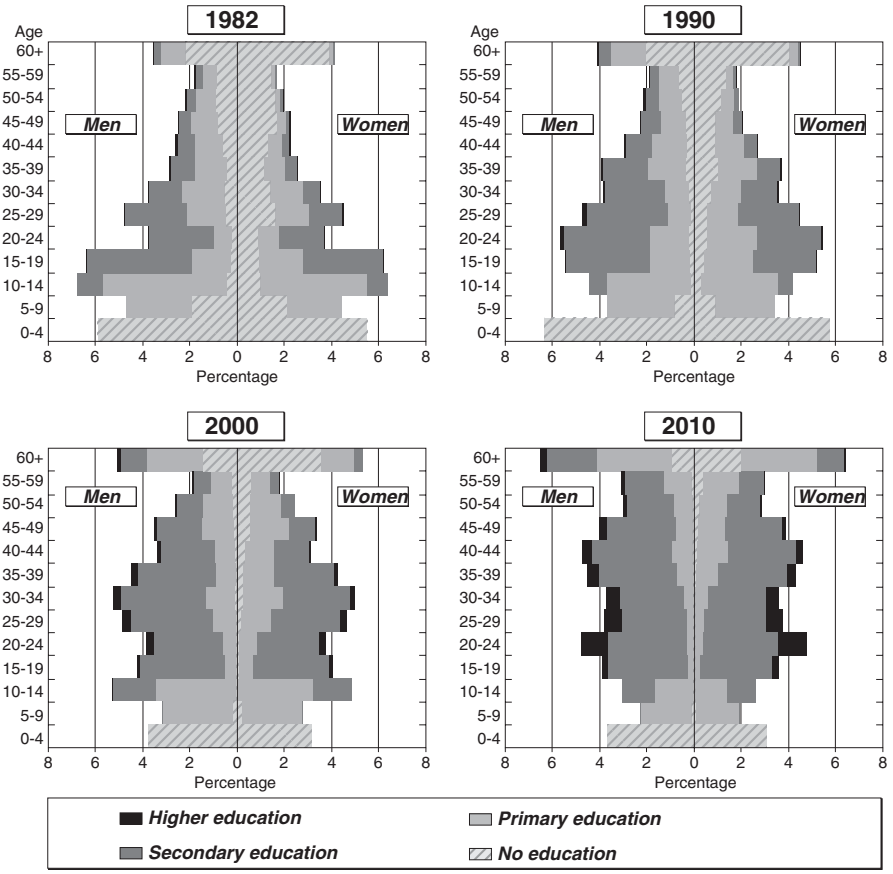



**Fig. 4.4** Age-sex pyramids for educational attainment in 1982, 1990, 2000 and 2010 (Source: Authors' calculations based on PCO 1985; PCO 1993; PCO 2002 and PCO 2012)

constructed four age-sex pyramids by educational levels for China in 1982, 1990, 2000 and 2010 (Fig. 4.4).

While the figures indicate that population size in the younger age cohorts shrank significantly through 1982 to 2010, the composition of educational levels by age and sex gives an impressive picture of changes in cohorts and of social transition:

1. From 1982 to 2010, among the population aged 6 and above, the proportion of persons with no education fell most sharply, followed by those with primary education; the proportion of people with a secondary education saw the most remarkable increase, followed by people with university education, consistent with the findings above.
2. In general, gender inequality in educational attainment is declining. In 1982, males with no education made up 9.4% of the population aged 5 and over, and females with no education 18.9%. As time went on, the gender gap fell sharply

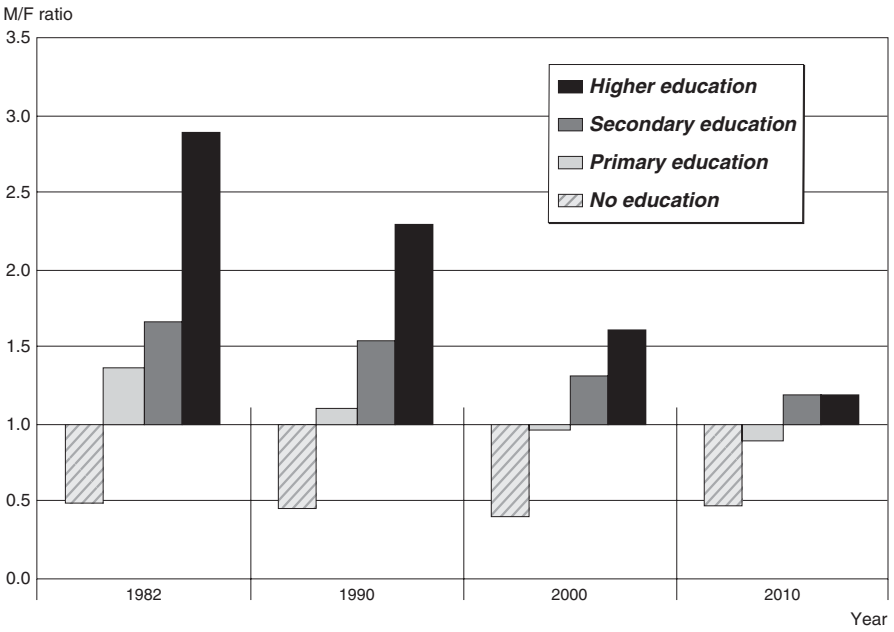



**Fig. 4.5** Gender gap in educational attainment (i.e. ratio between male and female percentages at each educational level) (Source: calculations based on PCO 1985, PCO 1993, PCO 2002, PCO 2012)

and continuously in the younger generations. The percentage of males in the total population with primary education was much higher than that of females in 1982 (20.4% and 15.0% respectively), but in 2010, the difference had narrowed (males with primary education representing 12.5% of the total and females 14.1%). Gender inequality in secondary education is also receding, though not so markedly. The most striking change is in the share of total population with higher education, which stood at 8.8% in 2010 (versus only 0.6% in 1982). Men and women are almost equally represented (4.8% are men and 4.0% are women), although the highly educated still account for a relatively small fraction of the population.

3. However, even if gender inequality in educational attainment is receding significantly, women still outnumber men in the low-educated groups (no education and primary education), while men are over-represented in the groups with secondary or higher education (Fig. 4.5).
4. Marked gender differences in the composition of educational attainment still exist in the older generations. With the passage of time, the adults of 1982 became the elderly of 2010, and the children of 1982 became the adults of 2010, and the gender differences moved up the pyramid accordingly. The third and fourth pyramids show that gender disparities mainly affected the older cohorts, and that the composition by educational attainment of the younger cohorts appears to be more symmetrical.

### 4.4.4 Changes Across Cohorts

The development of education is closely associated with a country's social and economic development, so it is important to test how major historical events or shifts in the Chinese economy translated into increased demand for educated workers, and how this affected education. A useful way of examining changing patterns of educational attainment in these varied environments is to look at the experiences of different individuals who share a unique constellation of circumstances, often defined by year of birth (birth cohort).

Based on the history of the People's Republic of China, four birth cohorts were selected for this study. Their trajectories reflect the effects of several important events that profoundly influenced individual educational attainment and literacy levels, as shown by Deng and Treiman (1997). Specifically, Cohort A consists roughly of men and women born between the Communist Revolution and the Great Leap Forward (1949–1960), who entered adulthood between the mid-1960s and the mid-1980s; Cohort B consists of individuals born in the period of economic recovery (1961–1966), who reached working age in the late 1980s; Cohort C consists of people born during the Cultural Revolution (1967–1976), who entered adulthood in the 1990s; Cohort D consists of the large numbers of people born in the era of the economic reforms (1977–2010), who benefited from a significantly improved educational environment. Given that most people have completed their initial education when they enter the 25–29 age group in China, and given that the influence of adult education on that age group is much lower than for other older groups, we therefore analysed the educational attainment of persons aged 25–29 in each cohort.

As Fig. 4.6 shows, the proportion of persons with no more than primary education has decreased remarkably, while the proportion with higher education has increased. Members of Cohort A are much more likely to have primary education or lower and much less likely to have a college degree than their counterparts in Cohorts C and D. The proportion of college graduates did not increase radically until Cohort D, when it reached a record 21%, compared with only 7% in Cohort C, 3% in Cohort B and 1% in Cohort A. The Cultural Revolution, significantly affected the educational level of Cohort C, whose proportion of high school graduates is only 15%, compared with 21% in Cohort B (Fig. 4.6).

From a perspective disaggregated by sex, educational attainment has improved dramatically for both men and women from one cohort to the next. In relative terms, improvement for women has been more significant. Whereas marked gender differences existed at all educational levels in the older cohorts, they disappeared in cohort D for secondary education and above. Although throughout the four cohorts, the proportion of women with high-school education is still lower than that of men, the difference between them is decreasing (see Table 4.2). The most noteworthy change for men is the increase in the proportion with college education and the decrease in the proportion with primary and below. But most of this change occurred in Cohort D for college education, in Cohort B and Cohort C for primary and below. The pattern is the same for women. For both men and women of Cohort C, the effects of the Cultural Revolution are clearly visible. Just 16% of men and 13% of

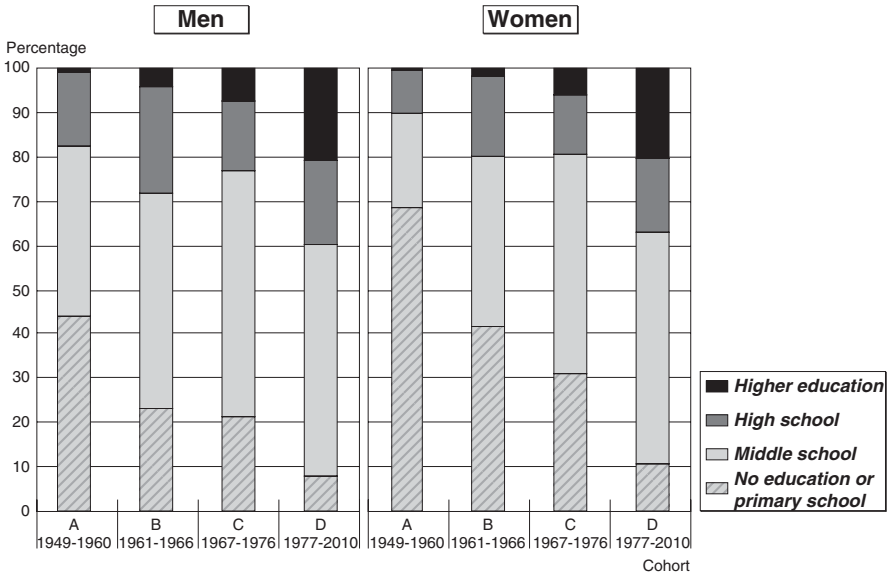



**Fig. 4.6** Changes in educational levels of women and men ages 25–29, by cohort (Source: Authors' calculations based on China population censuses PCO 1985; PCO 1993; PCO 2002 and PCO 2012)

**Table 4.2** Changes in the sex ratio at each education level, ages 25–29, by cohort (women per 100 men)

| Birth cohorts | Primary (*xiaoxue*) and lower | Middle school (*chuzhong*) | High school (*gaozhong*) | College (*dazhuan*) and above |
|---|---|---|---|---|
| A (1949–1960) | 155 | 55 | 59 | 53 |
| B (1961–1966) | 180 | 78 | 75 | 49 |
| C (1967–1976) | 145 | 89 | 84 | 83 |
| D (1977–2010) | 135 | 100 | 87 | 99 |

Source: Authors' calculations based on China population censuses PCO 1985; PCO 1993; PCO 2002 and PCO 2012

women have high-school education in Cohort C versus 24 % and 18 %, respectively, in Cohort B.

### *4.4.5 Educational Attainment of the Working-Age Population*

Education is known to be a powerful driving force for economic development, in particular because it contributes to improving the skills and knowledge of the labour force. The status and trends in educational attainment among the labour force may thus reflect a country's existing and future development potential. In China, people aged 25–59 are the backbone of the working population (Fig. 4.7).

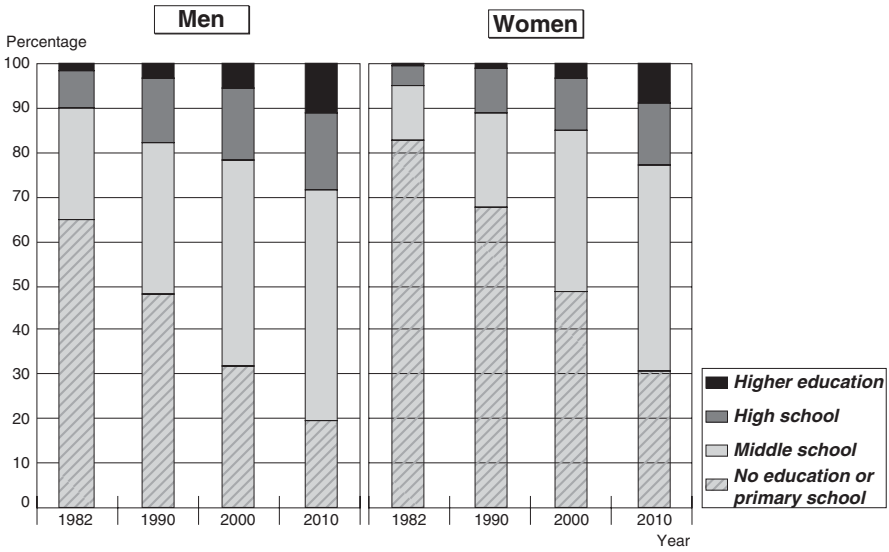



**Fig. 4.7** Educational attainment of working-age population (percentage at each level), ages 25–59, 1982–2010 (Source: Authors' calculations based on China population censuses PCO 1985; PCO 1993; PCO 2002 and PCO 2012)

The increase in the educational attainment of the working-age population is quite similar to that of the total population aged 6 years and above (see Fig. 4.2), the former being a crucial component of the latter. However, the range of variation on the proportion of each education level is different. The decline in the proportion of people with primary education or no education at all is much greater for the working-age population — which excludes the elderly, who are also those with the lowest educational levels: it fell by 48.4 percentage points in the working-age population and 38.0 percentage points in the population aged 6 and over between 1982 and 2010. For middle-school education, the proportion increased by 30.4 percentage points for the working-age population and 21.7 points for the population aged 6 and above. For high school education or higher education, the increase in the proportion is also slightly higher in the working-age population than in the population aged 6 and above.

The development trend of educational attainment is similar for both women and men at working ages, and gender equality is making progress. Disaggregated by sex, disparities in educational attainment were greater in 1982 than in 2010, especially for primary and middle-school education. Gender differences in high-school and higher education are not very striking in each census year. Neither is the amplitude of fluctuation around these differences. Overall, for both men and women, the progress is evident: while most of the working-age population had received only primary education or no education at all in 1982, a majority had reached at least middle school in 2010.

### *4.4.6 Changes in Regional Disparities*

#### 4.4.6.1 Urban-Rural Inequalities

Due to the constraints imposed by the *hukou* registration system (See Inset 4.1), wide disparities in social and economic indicators still exist between urban and rural areas, in particular concerning educational attainment. Table 4.3 shows that average years of education in both urban and rural areas increased by 2 years from 1990 to 2010, but the gap between them remained constant throughout the period.

Furthermore, a gender imbalance in average years of education has also been observed in both urban and rural areas, though it is more prominent in the latter. For instance, rural males had 1.2 years more schooling than rural females in 2000, versus 0.8 years for urban males with respect to urban females. These gender disparities in both urban and rural areas are narrowing, however, and the trend is much faster in rural areas where the gap was greater in the past. Gender differences may be eliminated in the foreseeable future, both in urban and rural areas.

**Inset 4.1 Household Registration and Mobility Control**

As early as 1955, a household registration system was set up in China under the authority of the Interior Minister. But the control of population movements was not enforced until the "*Regulations on household registration*" of 1958. One of the main goals was to end illegal migration to urban areas. To justify the introduction of this rigid and restrictive system, the authorities invoked the need to protect China from the informal urbanization typical of other developing countries. Curbing urban growth soon became a major priority. This, it was hoped, would prevent the worsening of urban employment conditions and channel population movements to better serve the regime's interests.

Until the 1980s, therefore, population migration and workers' mobility — the keystones of the planned economy — were tightly controlled. The Public Security Bureau kept a special watch on inter-province migration; except for compulsory transfers, it was nearly impossible to migrate from rural areas to urban areas without official permission. Even today, despite its steadily declining effectiveness, control is exercised via household registration: the *hukou* system. The *hukou* is a residence booklet, which theoretically obliges each individual, from cradle to grave, to reside in his or her birthplace, making migration virtually impossible. For many years, legal migration was a one-way ticket, each type of locality being assigned to a specific position in a very rigid hierarchy. A person could leave a large city for a smaller one, a town, a district or township capital, or a village. Horizontal migration was tolerated for people wishing to move to a locality of similar rank; so was vertical migration, but only from a larger unit to a smaller unit. A person born

in a village could move to another village in the same province, subject to permission by the authorities of both localities.

Even marriage did not afford an escape from *hukou* control. If a peasant woman married an urban dweller, the husband could resettle in his wife's native village, as the locality was of lower rank. But there was no hope of transferring the wife's *hukou* to the city. An urban dweller married to a peasant woman could not even look forward to being joined by his children one day, as the urban or rural status enshrined in the *hukou* was transmitted by the mother. As a result, the system spawned a Chinese Communist invention that was — to say the least — unusual: couples separated for administrative reasons, who saw each other only once a year, usually in the Spring Festival vacation. The only ways of being freed from this compulsory residence order were to enlist in the People's Liberation Army, to become a Party cadre, or to obtain a university degree, which entitled the holder to a job in a state-owned enterprise.

The system helped to turn China into a dichotomized society. Far from closing the gap between urban and rural areas, it fostered the perception that the right to live in urban areas was a privilege reserved for a minority. This feeling was exacerbated by the rationing system introduced after the Revolution. Ration coupons, for which only urban *hukou* holders were eligible, gave access to grain in the state-run market. Peasants were obviously excluded, and this posed an insuperable obstacle to their settling in cities (note: until 1985, it was illegal to sell grain on the free market). As the coupons could be exchanged only in the issuing town or city, they were also a means for controlling personal travel and thus complemented the *hukou* system. Rationing of staple commodities was abolished in the early 1990s.

From the 1980s, the regime gradually relinquished control over all personal movement. Rural decollectivization — the first step in economic reform — freed an abundant labour supply from the obligation to work on farms. The excess agricultural workforce was forced to turn to non-farming activities in order to survive. The " rural enterprises" (*xiangzhen qiye*) specially created to absorb this glut became increasingly incapable of doing so. Very often, the excess rural labour had other no choice than migration in order to meet the needs of new private-sector urban enterprises, which required large amounts of cheap labour. Meanwhile, the restructuring of state-owned enterprises put millions of people out of work. Having failed to reassign these workers itself, the state turned a blind eye to many individual migrations, the only solution for finding new work. The dichotomy generated by the personal registration system thus became less biased against peasants.

The paradox is that the jobseekers were forced into illegality solely because of the registration system's inconsistency. The system defines a migrant as anyone who legally transfers his or her *hukou* to a place of residence other than his or her place of birth. Now this legal migration, while ever

less restrictive, remains subject to annual quotas well below requirements. Migration with transfer of residence to the host locality thus accounts for a minimal share of actual migration. Most flows are generated by illegal migration, that of the "floating population" (*liudong renkou*). This phenomenon, specific to China, denotes temporary or permanent movements of persons in a province or between provinces, very often from rural areas to urban areas, without *hukou* transfer. Even if they relocate at several hundred kilometers' distance, these persons are officially regarded as still residing in their place of origin. At the time this book goes to press, the *hukou* system, while totally inappropriate to today's economic requirements, has undergone no substantial change since the late 1950s.

**I.A.**

#### 4.4.6.2 Provincial Disparities

Disparities in education attainment are observed not only between rural and urban areas but also between provinces. Table 4.4 shows that average years of schooling increased significantly, but unevenly, in all provinces, rising by 3.6 years from 1982 to 2010 at national level. The gap between provinces has widened, however. In 1982, there were 13 provinces below the national average in terms of average schooling years. They included central, southern and southwestern provinces, such as Anhui, Fujian, Jiangxi, Henan, Sichuan, Guizhou, Yunnan, Tibet, etc. In 2010, their number had increased to 16. The provinces of Hebei, Zhejiang, Shandong, Hainan and Xinjiang were slightly below the national average, but the other 11 provinces — still concentrated in the central and southwestern regions — were markedly below. However, the rate of increase in average years of schooling in some eastern developed provinces where the average duration of schooling was among the highest in 1982 — such as Shanghai, Beijing, Tianjin, and the Liaoning, for instance — was significantly slower over the period.

**Table 4.3** Average years of education of population aged 6 years and over, urban and rural areas, 1990–2010

| | 1990 | 2000 | 2010 |
|---|---|---|---|
| *Urban total* | *8.0* | *9.0* | *9.9* |
| Male | 8.6 | 9.4 | 10.2 |
| Female | 7.4 | 8.6 | 9.6 |
| *Rural total* | *5.6* | *6.8* | *7.6* |
| Male | 6.4 | 7.3 | 8.0 |
| Female | 4.7 | 6.1 | 7.1 |

Source: Authors' calculations based on China population censuses PCO 1985; PCO 1993; PCO 2002 and PCO 2012

**Table 4.4** Average years of schooling, by province, 1982–2010

| Region | Male | | | | Female | | | | Both sexes | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1982 | 1990 | 2000 | 2010 | 1982 | 1990 | 2000 | 2010 | 1982 | 1990 | 2000 | 2010 |
| Beijing | 7.6 | 8.3 | 9.9 | 11.1 | 6.6 | 7.3 | 9.2 | 10.9 | 7.1 | 7.8 | 9.5 | 11.0 |
| Tianjin | 7.0 | 7.5 | 8.9 | 9.8 | 5.7 | 6.6 | 8.2 | 9.5 | 6.4 | 7.1 | 8.5 | 9.7 |
| Hebei | 5.7 | 6.1 | 7.5 | 8.3 | 4.1 | 4.9 | 6.9 | 7.9 | 4.9 | 5.5 | 7.2 | 8.1 |
| Shanxi | 5.9 | 6.5 | 7.6 | 8.8 | 4.7 | 5.6 | 7.0 | 8.4 | 5.3 | 6.0 | 7.3 | 8.6 |
| Inner Mongolia | 5.3 | 6.3 | 7.7 | 8.7 | 4.0 | 5.2 | 6.8 | 8.2 | 4.7 | 5.7 | 7.2 | 8.4 |
| Liaoning | 6.4 | 7.1 | 8.2 | 9.2 | 5.4 | 6.3 | 7.6 | 8.8 | 5.9 | 6.7 | 7.9 | 9.0 |
| Jilin | 6.0 | 6.7 | 8.1 | 8.9 | 5.0 | 5.9 | 7.5 | 8.6 | 5.5 | 6.3 | 7.8 | 8.8 |
| Heilongjiang | 5.9 | 6.8 | 8.1 | 8.9 | 4.8 | 5.9 | 7.5 | 8.5 | 5.4 | 6.3 | 7.8 | 8.7 |
| Shanghai | 7.8 | 8.3 | 9.4 | 10.4 | 6.2 | 6.8 | 8.4 | 9.8 | 7.0 | 7.6 | 8.9 | 10.1 |
| Jiangsu | 5.7 | 6.5 | 8.0 | 9.0 | 3.6 | 4.9 | 6.8 | 8.1 | 4.7 | 5.7 | 7.4 | 8.6 |
| Zhejiang | 5.4 | 6.2 | 7.5 | 8.5 | 3.8 | 4.8 | 6.5 | 7.7 | 4.7 | 5.5 | 7.0 | 8.1 |
| Anhui | 4.7 | 5.5 | 7.1 | 8.0 | 2.5 | 3.6 | 5.8 | 7.0 | 3.6 | 4.6 | 6.5 | 7.5 |
| Fujian | 5.3 | 6.0 | 7.6 | 8.5 | 2.9 | 4.2 | 6.4 | 7.8 | 4.1 | 5.1 | 7.0 | 8.2 |
| Jiangxi | 5.2 | 6.0 | 7.4 | 8.1 | 3.2 | 4.2 | 6.3 | 7.4 | 4.2 | 5.1 | 6.9 | 7.7 |
| Shandong | 5.4 | 6.2 | 7.7 | 8.5 | 3.4 | 4.7 | 6.5 | 7.7 | 4.4 | 5.5 | 7.1 | 8.1 |
| Henan | 5.3 | 6.1 | 7.5 | 8.0 | 3.5 | 4.8 | 6.7 | 7.6 | 4.4 | 5.5 | 7.2 | 7.8 |
| Hubei | 5.7 | 6.3 | 7.8 | 8.8 | 3.9 | 4.8 | 6.8 | 8.0 | 4.8 | 5.5 | 7.3 | 8.4 |
| Hunan | 5.7 | 6.3 | 7.7 | 8.4 | 4.2 | 5.1 | 6.9 | 8.0 | 5.0 | 5.7 | 7.3 | 8.2 |
| Guangdong | 5.9 | 6.5 | 7.8 | 8.9 | 4.0 | 5.0 | 7.0 | 8.3 | 5.0 | 5.8 | 7.4 | 8.6 |
| Guangxi | 5.4 | 6.0 | 7.3 | 7.9 | 3.8 | 4.7 | 6.5 | 7.4 | 4.6 | 5.4 | 7.0 | 7.6 |
| Hainan | NA | 6.4 | 7.5 | 8.5 | NA | 4.6 | 6.3 | 7.7 | NA | 5.5 | 7.0 | 8.1 |
| Chongqing | NA | NA | 7.1 | 8.2 | NA | NA | 6.3 | 7.7 | NA | NA | 6.7 | 7.9 |
| Sichuan | 5.1 | 6.0 | 6.9 | 7.9 | 3.7 | 4.8 | 6.1 | 7.3 | 4.4 | 5.4 | 6.5 | 7.6 |
| Guizhou | 4.2 | 5.1 | 6.2 | 7.2 | 2.1 | 3.1 | 4.6 | 6.3 | 3.2 | 4.2 | 5.4 | 6.8 |
| Yunnan | 3.9 | 4.9 | 6.2 | 7.3 | 2.3 | 3.3 | 5.1 | 6.6 | 3.1 | 4.1 | 5.7 | 7.0 |
| Tibet | 2.0 | 2.5 | 3.7 | 5.2 | 0.9 | 1.1 | 2.4 | 4.2 | 1.4 | 1.8 | 3.0 | 4.7 |
| Shaanxi | 5.5 | 6.1 | 7.6 | 8.8 | 4.0 | 4.7 | 6.7 | 8.2 | 4.8 | 5.4 | 7.2 | 8.5 |
| Gansu | 4.6 | 5.3 | 6.7 | 7.9 | 2.5 | 3.4 | 5.2 | 7.0 | 3.6 | 4.4 | 6.0 | 7.4 |
| Qinghai | 4.4 | 5.3 | 6.2 | 7.4 | 2.6 | 3.5 | 4.7 | 6.5 | 3.5 | 4.4 | 5.5 | 7.0 |
| Ningxia | 4.5 | 5.5 | 6.9 | 8.1 | 2.8 | 4.0 | 5.7 | 7.4 | 3.6 | 4.8 | 6.3 | 7.8 |
| Xinjiang | 4.7 | 5.8 | 7.2 | 8.2 | 4.1 | 5.3 | 6.8 | 8.0 | 4.4 | 5.6 | 7.0 | 8.1 |
| Nation | 5.4 | 6.2 | 7.5 | 8.5 | 3.7 | 4.8 | 6.6 | 7.9 | 4.6 | 5.5 | 7.1 | 8.2 |

NA indicates that data are not available, as Chongqing became a province in 1997, and Hainan in 1988. The calculation of average years of education here is different from Fig. 4.1 and Table 4.3. The denominator here is the whole population, as the census of 1982 did not report the population aged 6 years and over by province.

For the purpose of the calculations above, "education", which is a categorical variable, has been changed into a continuous variable: 6 years for primary school, 9 years for middle school, 12 years for high school, 15 years for 3-year college, 16 years for 4-year college and 19 years for master's level graduate education.

Source: Authors' calculations based on PCO 1985; PCO 1993; PCO 2002 and PCO 2012

Like the difference between the sexes of each province shown in Table 4.4, Fig. 4.8 clearly indicates that the higher the level of development in a province, the smaller the gender gap in average years of education. Between 1982 and 2010, the difference between the sexes in average years of schooling at provincial level narrowed significantly. In 1982, in almost all provinces (except for Xinjiang) it was more than one year, and exceeded 1.5 years in many provinces such as Jiangsu, Anhui, Fujian, Jiangxi, Shandong, and Shaanxi. By 2010, the gender gap had fallen to one year in almost all provinces, and between northern and northeast areas it has been reduced to 0.5 years.

## Discussion and Conclusion

Since the second half of the 20th century, China has achieved significant improvements in the field of education, with an increase of 3.5 years in the average length of schooling of the population aged over 6 years between 1982 and 2010. The nine years of compulsory education have become almost universal in the youngest generations. Significant disparities remain however, in particular between urban and rural areas (with a 2-year gap) and between provinces. In the most developed parts of the country, such as Beijing and Shanghai, the average length of schooling is now similar to that observed in the most developed countries (Barro and Lee 2012). In addition, thanks to the generalization of secondary education and the development of higher education in the younger generations, overall educational attainment has increased, in particular for the working-age population, and, with the extinction of the older generations, the illiteracy rate has significantly declined.

Meanwhile, the educational gap between men and women has narrowed remarkably, both in urban and rural areas. Female students enrolled in higher education accounted for more than 50 % of total student enrolment in 2011, and it is clear that the gender gap in education today is mainly due to differences in the lower education levels and in the population with no education, rather than in the higher education level. The greater gender equality in access to higher education achieved during the past decades is encouraging. However, it is noticeable that the sex ratio of primary or secondary school enrolment is still male-biased — partly due to the increasing sex ratio at birth observed from the 1980s (See Chap. 5) —, making girls a minority in the youngest age cohorts.

The progress in Chinese education over the past few decades is remarkable. Average years of schooling have increased, the composition of educational attainment has improved and gender inequality has been narrowed. What's more, in parallel to the improvement in educational level, China has also witnessed dramatic demographic transition. In terms of life expectancy at birth (See Chap. 11), infant mortality rate and maternal mortality rate, China has almost caught up with the developed countries, while the total fertility rate is among the lowest in the world (see Chap. 2). Whereas demographic transition in the developed countries took hundreds of years to complete, it took a just few decades in China, and occurred alongside

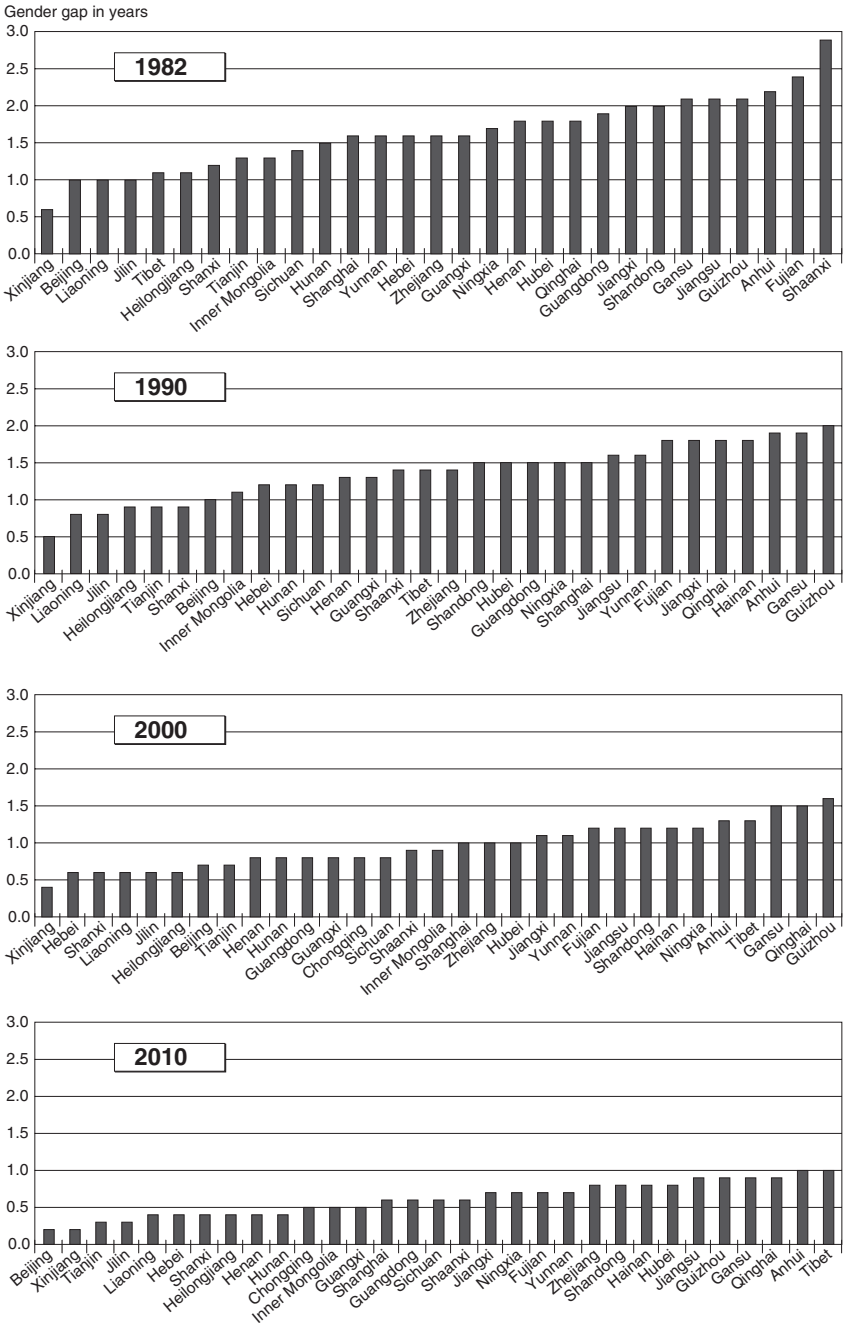



**Fig. 4.8** Gender gap in average number of years of schooling, by province, 1982, 1990, 2000 and 2010 (in years) (Source: Authors' calculations based on Table 4.4)

the promotion of gender equality and rapid economic development. Without the stimulation of education, such rapid and promising progress could probably never have been achieved in such a short period.

However, gender inequality has not yet been completely eliminated, and this issue needs to be further addressed. China's rapid urbanization and sustained economic growth have been accompanied by massive internal migration from rural villages to urban centres, which has simultaneously raised a set of educational issues concerning migrants' children. The education of left-behind and migrant children has become a matter of concern: most migrant children cannot access high-quality education in urban areas due to the constraints imposed by the *hukou* system, while the children left behind in the rural areas do not enjoy the same qualified education resources and financial support as children born in urban areas. Last but not least, the rapid growth of higher education in China has been accompanied by an increasing rate of graduate unemployment and its associated problems. This is closely associated with the process of economic development and reform in China, as well as reforms in education. Although the Chinese government has implemented various measures to relieve the pressure of graduate unemployment, such as the "Go West Project (*xibu dakaifa*)",[5] the graduate unemployment rate remains high. This is because the old framework of China's higher education system has not adapted fully to the new demands of the market. Whether or not there is a surplus of highly qualified young people in China is a question that calls for further research and greater attention. In the face of such challenges, Chinese educational reform still has a long way to go.

## References

Barro, R. J., & Lee, J.-W. (2012). *A new data set of educational attainment in the world, 1950–2010*. The National Bureau of Economic Research. NBER Working Paper 15902. http://www.nber.org/papers/w15902. Retrieved 9 Sept 2013.

Becker, G. S. (1994). *Human capital: A theoretical and empirical analysis, with special reference to education*. Chicago: University of Chicago Press.

Becker, S. O., Cinnirella, F., & Woessmann, L. (2013). Does women's education affect fertility? Evidence from pre-demographic transition Prussia. *European Review of Economic History, 17*(1), 24–44.

Bernstein, T. P. (1977). *Up to the mountains and down to the villages: The transfer of youth from urban to rural China*. New Haven: Yale University Press.

Bottani, N. (1996). OECD international education indicators. *International Journal of Educational Research, 25*(3), 279–288.

Brown, D. C., Hayward, M. D., Montez, J. K., Hummer, R. A., Chiu, C. T., & Hidajat, M. M. (2012). The significance of education for mortality compression in the United States. *Demography, 49*(3), 819–840.

[5] China's "Go West" Project, launched in 1999 just before the country's entry into the World Trade Organization in 2001, has been a milestone in the nation's economic development. The aim was to boost the poorer western parts of the country that had so far not enjoyed the economic benefits of China's opening up to the outside world.

Chan, A. (2009). *Paying the price for economic development: the children of migrant workers in China*. Hong Kong: China Labour Bulletin. http://www.clb.org.hk/en/files/share/File/research_reports/Children_of_Migrant_Workers.pdf. Retrieved 22 Nov 2013.

Chen, Y., & Feng, S. (2012). Access to public schools and the education of migrant children in China. http://ftp.iza.org/dp6853.pdf. Retrieved 22 Nov 2013.

Cheng, H. (2009). Inequality in basic education in China: A comprehensive review. *International Journal of Educational Policies, 3*(2), 81–106.

Cheng, Y., & Manning, P. (2003). Revolution in education: China and Cuba in global context, 1957–76. *Journal of World History, 14*(3), 359–391.

Cutler, D. M., & Lleras-Muney, A. (2006). *Education and health: evaluating theories and evidence*. The National Bureau of Economic Research. NBER Working Paper No. 12352.

Deng, Z., & Treiman, D. J. (1997). The impact of the cultural revolution on trends in educational attainment in the People's Republic of China. *American Journal of Sociology, 103*(2), 391–428.

Duan, C. (2012). Liudong ertong yiwu jiaoyu hou wenti (Problems related to compulsory education for migrant children). *China Social Sciences Today*, PB01.

Duan, C., & Huang, Y. (2012). Jiu xue yu jiu ye: Woguo daling liudong ertong zhuangkuang yanjiu (Schooling and employment: Study on schooling-age migrant children). *China Youth Study, 1,* 91–96.

Duan, C., Lü, L., & Zou, X. (2013). Dangqian woguo liudong renkou mianlin de zhuyao wenti he duice: Ji yu 2010 nian di liu ci quanguo renkou pucha shuju de fenxi (Major challenges for China's floating population and policy suggestions: An analysis of the 2010 population census data). *Renkou yanjiu, 37*(2), 17–24.

French, H. F., & Bax, M. (1998). *Investing in the future*. Worldwatch Institute. http://www.btfpartnership.co.uk/upload/pdf/panels/6_a.pdf. Retrieved 22 Nov 2013.

Gregorio, J. D., & Lee, J.-W. (2002). Education and income inequality: New evidence from cross-country data. *Review of Income and Wealth, 45*(3), 395–416.

Hawkins, J. N. (2000). Centralization, decentralization, recentralization-educational reform in China. *Journal of Educational Administration, 38*(5), 442–455.

Hu, B., & Szente, J. (2010). Education of young Chinese migrant children: Challenges and prospects. *Early Childhood Education Journal, 37*(6), 477–482.

Huang, H., & Li, L. (2012). Woguo yanjiu sheng jiaoyu dui jingji zengzhang de gong xian lv: Ji yu 1996–2009 nian sheng ji mian ban shuju de shizheng yanjiu (The impact of graduate education on economic growth in China: An empirical analysis on a provincial panel data from 1996 to 2009). *Journal of Higher Education, 33*(1), 57–64.

Inglehart, R., & Norris, P. (2003). *Rising tide: Gender equality and cultural change around the world*. Cambridge: Cambridge University Press.

Johnson, W., Kyvik, K. O., Mortensen, E. L., Skytthe, A., Batty, G. D., & Deary, I. J. (2011). Does education confer a culture of healthy behavior? Smoking and drinking patterns in Danish twins. *American Journal of Epidemiology, 173*(1), 55–63.

Kitagawa, E. M., & Hauser, P. M. (1973). *Differential mortality in the United States: A study in socioeconomic epidemiology*. Cambridge: Harvard University Press.

Kwong, J. (2004). Educating migrant children: Negotiations between the state and civil society. *The China Quarterly, 180*(1), 1073–1088.

Leung, F. K. (2004). *Educational centralization and decentralization in East Asia*. Paper presented at the APEC Educational Reform Summit, Beijing, China.

Liang, J., Liu, X., & Gu, S. (2001). Transitions in functional status among older people in Wuhan, China: Socioeconomic differentials. *Journal of Clinical Epidemiology, 54*(11), 1126–1138.

Liang, Z., & Chen, Y. P. (2007). The educational consequences of migration for children in China. *Social Science Research, 36*(1), 28–47.

Liu, Z. (2007). The external returns to education: Evidence from Chinese cities. *Journal of Urban Economics, 61*(3), 542–564.

Lopez, R., Thomas, V., & Wang, Y. (1998). Addressing the education puzzle: the distribution of education and economic reform. The World Bank. http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-2031. Accessed 22 Nov 2013.

Lutz, W., Cuaresma, J. C., & Sanderson, W. (2008). The demography of educational attainment and economic growth. *Science, 319*(5866), 1047–1048.
Lutz, W., & Samir K. C. (2011). Global human capital: Integrating education and population. *Science, 333*(6042), 587–592.
Manuchehr, T.-N. (2010). UNO and the human rights education. *Procedia-Social and Behavioral Sciences, 2*(2), 1249–1252.
Mao, Z.-R., & Shen, G.-Q. (1989). *Zhongguo jiaoyu tongshi* (*History of Chinese education*) (Vol. 6). Jinan: Shandong Education Publication.
Martin, T. C. (1995). Women's education and fertility: results from 26 demographic and health surveys. *Studies in Family Planning, 26*(4), 187–202.
Meyerhoefer, C. D., & Chen, C. (2011). The effect of parental labor migration on children's educational progress in rural China. *Review of Economics of the Household, 9*(3), 379–396.
MOE (Ministry of Education) (2009). 2009 nian quanguo jiaoyu jing fei zhixing qingkuang tongji gonggao (National expenditure in education. Statistical report 2008). *Research in Educational Development, 23,* 86–87.
MOE (Ministry of Education). (2011). Zhongguo jiaoyu fazhan baogao 2010 (National education development report 2010). http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s5990/201111/126550.html. Retrieved 25 March 2013.
Molla, M. T., Madans, J. H., & Wagener, D. K. (2004). Differentials in adult mortality and activity limitation by years of education in the United States at the end of the 1990s. *Population and Development Review, 30*(4), 625–646.
Montgomery, J. L. (2012). Inheritance of inequality: Hukou and related barriers to compulsory education for China's migrant children. *Pacific Rim Law and Policy Journal, 21*(3), 591–622.
NPFPC (National Population and Family Planning Commission). (2010). *Zhongguo liudong renkou fazhan baogao 2010* (Reports on the development of China's migrant population). Beijing: China Population Press.
NBS (National Bureau of Statistics of China). (2010). Shou jiaoyu zhuangkuang (Educational status). In *2009 Zhongguo renkou* (Vol. 1). Beijing: China Statistical Publishing House.
OECD. (2008). *Education at a glance 2008*. Paris: OECD Publications.
O'Neill, D. (1995). Education and income growth: Implications for cross-country inequality. *Journal of Political Economy, 103*(6), 1289–1301.
Oppenheim Mason, K. (1987). The impact of women's social position on fertility in developing countries. *Sociological Forum, 2*(4), 718–745.
Park, K. H. (1996). Educational expansion and educational inequality on income distribution. *Economics of education review, 15*(1), 51–58.
PCO. (1985). *Population Census Office and National Bureau of Statistics of China. Zhongguo 1982 nian renkou pucha ziliao (Tabulation on the 1982 Population Census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.
PCO. (1993). *Population Census Office and National Bureau of Statistics of China. Zhongguo 1990 nian renkou pucha ziliao (Tabulation on the 1990 Population Census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.
PCO. (2002). *Population Census Office and National Bureau of Statistics of China. Zhongguo 2000 nian renkou pucha ziliao* (*Tabulation on the 2000 Population Census of the People's Republic of China*). Beijing: China Statistics Press.
PCO. (2012) *Population Census Office and National Bureau of Statistics of China. Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.
Qian, X., & Smyth, R. (2008). Measuring regional inequality of education in China: Widening coast-inland gap or widening rural-urban gap? *Journal of International Development, 20*(2), 132–144.
Ross, C. E., & Wu, C. (1995). The links between education and health. *American Sociological Review, 60*(5), 719–745.
Samir, K. C., & Lentzner, H. (2010). The effect of education on adult mortality and disability: A global perspective. *Vienna Yearbook of Population Research, 8,* 201–235.

Schoeni, R. F., Martin, L. G., Andreski, P. M., & Freedman, V. A. (2005). Persistent and growing socioeconomic disparities in disability among the elderly: 1982–2002. *American Journal of Public Health, 95*(11), 2065–2070.

Schultz, T. W. (1963). *The economic value of education*. New York: Columbia University Press.

Striessnig, E., Lutz, W., & Patt, A. G. (2013). Effects of educational attainment on climate risk vulnerability. *Ecology and Society, 18*(1), 16.

Sun, B., & Qi, J. (2007). Development of ethnic education and educational equality in China. *Frontiers of Education in China, 2*(4), 528–535.

Sweetland, S. R. (1996). Human capital theory: Foundations of a field of inquiry. *Review of Educational Research, 66*(3), 341–359.

Unger, J. (1982). *Education under Mao: Class and competition in Canton schools, 1960–1980*. New York: Columbia University Press.

UNDP (United Nations Development Programme). (2005). *China Human Development Report 2005*. New York: UNDP.

Wang, F. L. (2004). Reformed migration control and new targeted people: China's Hukou system in the 2000s. *The China Quarterly, 177,* 115–132.

World Bank. (2006). Gender gaps in China: facts and figures. http://siteresources.worldbank.org/INTEAPREGTOPGENDER/Resources/Gender-Gaps-Figures&Facts.pdf. Retrieved 22 Nov 2013.

World Bank. (2011). School enrollment, tertiary (% gross). The World Bank. http://data.worldbank.org/indicator/SE.TER.ENRR. Accessed 22 March 2013.

Wu, X., Ye, H., & He, G. (2012). Fertility decline and women's empowerment in China. In: *The selected works of Xiaogang Wu*. http://works.bepress.com/xiaogang_wu/32. Accessed 22 Nov 2013.

Ye, H., & Wu, X. (2012). Fertility decline and gender inequality in education in China. In: *The selected works of Xiaogang Wu*. http://works.bepress.com/xiaogang_wu/32. Accessed 22 Nov 2013.

Zhang, C., Huan, Z., & Li, H. (2007). An empirical study on education equity in China, 1978–2004. *Frontiers of Education in China, 2*(4), 536–544.

Zeng, J., Pang, X., Zhang, L., Medina, A., & Rozelle, S. (2013). Gender inequality in education in China: a meta-regression analysis. *Contemporary Economic Policy*. http://iis-db.stanford.edu/pubs/23822/Gender_Inequality_in_Education_in_China.pdf. Retrieved 22 Nov 2013.

Zhao, Y. (1999). Labor migration and earnings differences: The case of rural China. *Economic Development and Cultural Change, 47*(4), 767–782.

Zhou, X., Moen, P., & Tuma, N. B. (1998). Educational stratification in urban China: 1949–94. *Sociology of Education, 71*(3), 199–222.

# Chapter 5
# The Male Surplus in China's Marriage Market: Review and Prospects

**Shuzhuo Li, Quanbao Jiang and Marcus W. Feldman**

## 5.1 Introduction

China's male-biased sex structure has drawn a great deal of attention both in China and abroad. In particular, the male marriage squeeze resulting from the shortage of women of marriageable age raises many questions concerning its demographic and social impacts. This male marriage squeeze is expected to worsen after the 2010s due to the increase in the sex ratio at birth (SRB) from the 1980s. There will be a group of "bare branches", namely men mostly at the bottom of the Chinese social hierarchy, who will face a high probability of remaining lifelong bachelors (Chen 2006).

The potential impact of this surplus of males on China's socioeconomic development has been widely discussed (Attané 2013; Edlund et al. 2007; Ebenstein and Sharygin 2009; Wei and Zhang 2011), and some scholars have even considered its potential impact on security issues (Hudson and den Boer 2004; Poston et al. 2011). In this chapter, we attempt to estimate the male surplus in China's population of marriageable ages in the coming decades, and make some assumptions about its possible impact on society, individuals, and especially women.

## 5.2 The Deteriorating Sex Ratio at Birth

Among the demographic factors affecting sex distribution among adults are the sex ratio at birth (SRB), overall age structure, mortality differences between males and females, and international migration. In China, the sex ratio at birth, which became increasingly imbalanced in favour of boys from the 1980s, is a major factor, although it will affect the adult sex structure only in the decades after 2010, when male-biased cohorts born from 1980 will enter the marriage market.

Q. Jiang (✉) · S. Li
Xi'an Jiaotong University, IPDS, Xi'an, China
e-mail: recluse_jqb@126.com

M. W. Feldman
FSI, Stanford University, USA

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_5, 

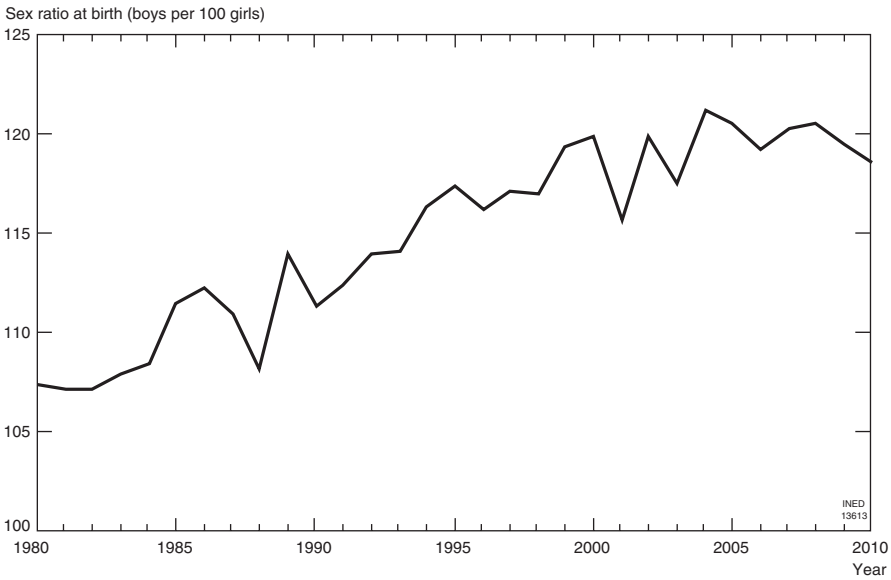



**Fig. 5.1** Sex ratio at birth each year between 1980 and 2010 (Sources: Li et al. 2006; NBS 2000–2009; PCO 2012)

The imbalanced sex ratio at birth is the result of declining fertility and deeply entrenched son preference, leading to significant discrimination against daughters, combined with the spread of modern technologies for prenatal sex-selection. Male heirs play dominant economic and social roles in China's patriarchal system: sons provide labour for fieldwork or family enterprise, and traditionally support their elderly parents. Cultural traditions dictate that only sons can continue the family line and enhance the family status. As a result, Chinese families still manifest a strong preference for sons, and increasingly discriminate against daughters because, in the context of low fertility imposed by the family planning policy, a daughter may deprive them of the possibility of having a son (Attané 2013). Recent changes in reproductive behaviour and the growing numbers of small families have also favoured son preference. With the rising cost of living and changing lifestyles, more and more couples are spontaneously limiting the number of their children, and there is a growing trend to select the child's sex prior to birth. This has produced the significant increase in the SRB observed since the 1980s, as shown in Fig. 5.1.

The imbalance in the sex ratio at birth, perceptible at the national level from the early 1980s, became manifest in the overwhelming majority of China's provinces in the following decades. It did not arise everywhere at the same time, however, and there are considerable regional differences in the speed of its increase (Fig. 5.2). In the 1982 census, the sex ratio at birth at the national level was still almost normal, at around 107 boys per 100 girls, but it was already deviating from the norm of 105–106 in some provinces. In Anhui, Guangdong, Guangxi, Shandong and Henan, it had already reached or even exceeded 110 in 1982. From then on, the situation continued to deteriorate in most provinces, except the sparsely populated western provinces, to the point that it exceeded 120 in 11 provinces in 2000.

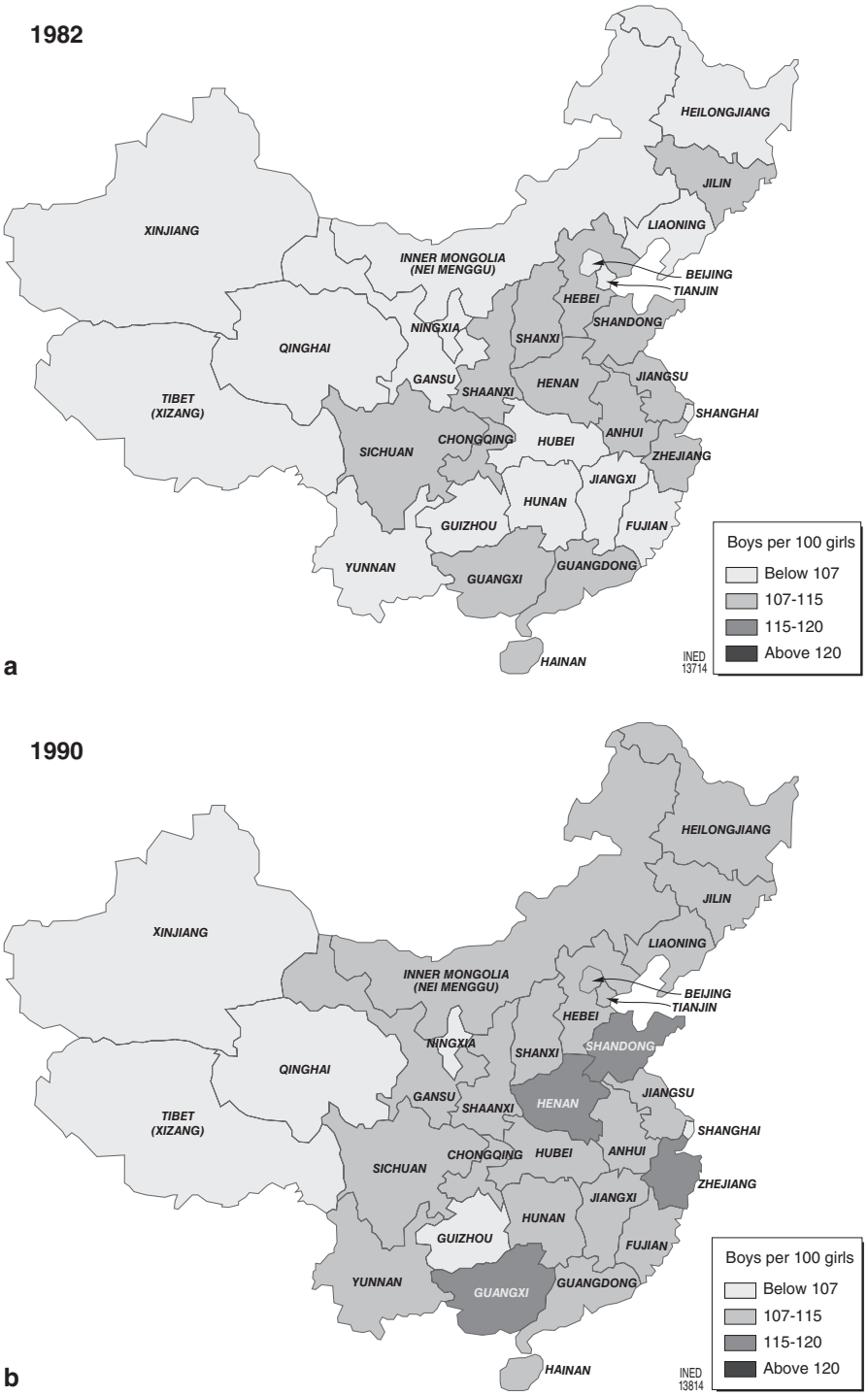



**Fig. 5.2 a–d** Trends in sex ratio at birth in Chinese provinces (Sources: PCO 1985, 1993, 2002, 2012)



**Fig. 5.2 a–d** (continued)

**Table 5.1** Sex ratios and proportions of never-married by sex and age group (men per 100 women)

| Age group | 1990 | | | 2000 | | | 2010 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Proportion of never married (%) | | Sex ratio | Proportion of never married (%) | | Sex ratio | Proportion of never married (%) | | Sex ratio |
| | Male | Female | | Male | Female | | Male | Female | |
| 20–24 | 62.5 | 41.4 | 158 | 78.7 | 57.5 | 137 | 82.4 | 67.6 | 121 |
| 25–29 | 16.7 | 4.3 | 410 | 24.7 | 8.7 | 288 | 36.3 | 21.6 | 166 |
| 30–34 | 7.2 | 0.6 | 1225 | 7.5 | 1.4 | 564 | 12.6 | 5.4 | 239 |
| 35–39 | 5.7 | 0.3 | 2005 | 4.1 | 0.5 | 837 | 6.4 | 1.7 | 375 |
| 40–44 | 5.2 | 0.2 | 2404 | 3.8 | 0.3 | 1401 | 4.2 | 0.7 | 562 |
| 45–49 | 5.1 | 0.2 | 3191 | 4.0 | 0.2 | 2004 | 3.2 | 0.4 | 714 |

Sources: PCO 1993, 2002, 2012

The situation did not change radically between the last two population censuses in 2000 and 2010. The one-point increase observed in the sex ratio at birth at the national level over this period (from 116.9 to 117.9 boys per 100 girls) conceals some convergence of the ratios at the provincial level: the sex ratio at birth declined in all the provinces where it was above 120 in 2000 (Anhui excepted) while increasing in all those where it was below 110 in 2000. However, it still exceeded 120 in one-third of the provinces in 2010; China's sex imbalance at birth thus remains extremely abnormal and therefore worrisome.

While the sex ratio at birth reached new highs during the mid-2000s, exceeding 120 boys per 100 girls against the normal value of 105–106, it has decreased slightly in the most recent years. According to the National Population and Family Planning Commission, the sex ratio at birth has declined for four consecutive years, dropping from 120.6 in 2008, to 119.5 in 2009, 117.9 in 2010, 117.8 in 2011, and 117.7 in 2012 (Li 2013). However, it is uncertain whether it will remain around 120 or continue to fall, as optimistically anticipated by some scholars (Das Gupta et al. 2009; Guilmoto 2012).

## 5.3 The Growing Numerical Sex Imbalance Among Adults

### *5.3.1 Proportions of Never-Married by Sex and Age Group, and Sex Ratio of the Unmarried*

The proportion of unmarried by sex and age group among adults, and the corresponding sex ratios in 1990, 2000, and 2010, are shown in Table 5.1. It appears that while the observed sex ratios are usually approaching equilibrium at around 100 men per 100 women by the ages of 30–40, men recurrently outnumber women both in the total and the unmarried population. This shortage of women, especially among the unmarried, is partly the consequence of excess female mortality that prevailed during most of the twentieth century. It is also the result of the decreasing size of annual birth cohorts over the past decades, which has led to a mechanical decrease in the sex ratio of people reaching marriageable age, given the age gap between spouses at marriage (Attané 2013). In 1990, 5.1% of men aged 45–49 were unmarried, compared to only

**Table 5.2** Proportions of never-married and corresponding sex ratios (men per 100 women) by place of residence in 2010

| Age group | City | | | Town | | | Rural area | | |
|---|---|---|---|---|---|---|---|---|---|
| | Proportion (%) | | Sex ratio | Proportion (%) | | Sex ratio | Proportion (%) | | Sex ratio |
| | Male | Female | | Male | Female | | Male | Female | |
| 20–24 | 89.8 | 80.1 | 112 | 81.2 | 65.1 | 124 | 76.9 | 58.5 | 129 |
| 25–29 | 44.8 | 29.1 | 151 | 31.5 | 17.8 | 169 | 31.1 | 16.7 | 187 |
| 30–34 | 13.3 | 7.4 | 183 | 9.1 | 3.7 | 239 | 13.7 | 4.4 | 321 |
| 35–39 | 5.4 | 2.7 | 203 | 4.2 | 1.2 | 358 | 8.3 | 1.3 | 640 |
| 40–44 | 2.9 | 1.3 | 231 | 2.6 | 0.5 | 508 | 5.5 | 0.5 | 1092 |
| 45–49 | 2.0 | 0.8 | 256 | 2.0 | 0.3 | 614 | 4.3 | 0.3 | 1547 |

Source: PCO (2012)

0.2% of women, and the ratio of unmarried males to unmarried females in this age group was 3,191 to 100. In 2000, 4.0% of males aged 45–49 were unmarried, versus only 0.2% of females in this age group, and the number of unmarried males was 20 times higher than that of the corresponding female group (2004 to 100). In 2010, the percentages were 3.2% and 0.4%, respectively, and the ratio was 714 to 100.

### *5.3.2 The Never-Married are Mainly Males, Concentrated in Rural Areas, and with a Low Educational Level*

The proportions and the sex ratios of never-married by place of residence, namely cities, towns, and rural areas, are shown in Table 5.2. Clearly, there is a much more pronounced numerical imbalance between unmarried men and women in rural areas (as the sex ratio in 2010 is far beyond the normal range, at 166.6 unmarried men per 100 unmarried women in the age-group 20–49, even reaching 1,547 for the group aged 45–49). An imbalance also exists in towns and cities, with a sex ratio among the never-married reaching 614 for the age group 45–49 in towns, nearly three times the level of 256 observed in cities.

It appears from Table 5.3 that the proportion of never-married males over the age of 25 and the sex ratios in each age group are highest among those with a low educational level (primary school) or no education, while men with at least secondary education are almost all married by the age of 35. Particularly striking is that more than one in three men with no education are still unmarried beyond age 40, and are therefore very likely to remain lifelong bachelors (Attané et al. 2013). Among men with at least secondary education, the percentage of never-married drops to 5% or less beyond age 35, meaning that almost all men who have completed at least the 9 years of compulsory education and plan to marry succeed much more frequently than the others in doing so.

As evidenced by various studies, both in China and abroad, the men most likely to remain lifelong bachelors live mostly in rural areas, and have low educational levels (Li et al. 2010). This indicates that the marriage market in rural areas and among the less advantaged male socioeconomic groups is clearly affected by hypergamy, as women exercise their preference for a spouse of higher socioeconomic

**Table 5.3** Proportions of never-married males and sex ratios (men per 100 women) by educational level and age group in 2010

| Age group | No education | | Primary School | | Secondary school | | University | |
|---|---|---|---|---|---|---|---|---|
| | Percent unmarried | Sex ratio | Percent unmarried | Sex ratio | Percent unmarried | Sex ratio | Percent unmarried | Sex ratio |
| 20–24 | 84.0 | 141.2 | 71.0 | 138.0 | 77.8 | 132.5 | 96.4 | 100.8 |
| 25–29 | 61.7 | 195.5 | 35.7 | 220.7 | 31.1 | 183.0 | 53.4 | 133.4 |
| 30–34 | 50.0 | 296.1 | 19.8 | 393.8 | 11.0 | 248.3 | 13.5 | 155.8 |
| 35–39 | 43.2 | 477.9 | 12.7 | 759.6 | 5.1 | 351.2 | 4.2 | 148.8 |
| 40–44 | 37.9 | 660.9 | 8.7 | 1,196.8 | 2.7 | 453.5 | 1.8 | 145.0 |
| 45–49 | 34.5 | 815.1 | 7.3 | 1,547.3 | 1.8 | 536.0 | 0.9 | 141.1 |
| 20–49 | – | 264.9 | – | 271.1 | – | 155.4 | – | 110.0 |

Source: PCO (2012)

status (Attané 2013). In cities and towns, however, where men have better socioeconomic conditions on average, the male surplus is attenuated by immigration from rural areas of women searching for a wealthier spouse in the more developed and urbanized regions. As a consequence, the shortage of women in the marriage market tends to be felt mainly in poverty-stricken areas, and among men living in poor socioeconomic conditions (Li et al. 2010; Liu et al. 2012).

## 5.4 Future Trends in the Male Marriage Squeeze

An individual's decision to marry or not and the mate selection process are influenced by various social, economic, and cultural criteria. But they are also affected by demographic circumstances, and in particular by the respective numbers of women and men in the marriage market.

In a previous study, Jiang et al. (2011) calculated the sex ratios of potential first-marriage partners[1] to estimate the extent of the marriage squeeze in the whole population of marriageable age regardless of marital status.[2] The estimates presented in Figs. 5.3, 5.4 and 5.5 apply these potential first-marriage sex ratios to the 2010 census data. Even if the results are to some extent affected by possible under- or over-counts at the 2010 census (Tao and Zhang 2013), they nonetheless provide strong evidence of the upcoming sex imbalance on the marriage market, with the potential first-marriage sex ratio reaching 1.19 men per woman in 2020 and peaking at 1.25 in 2035 before falling steadily thereafter under our assumption of a declining sex ratio at birth as early as 2010.

[1] The sex ratio of potential first marriage partners is defined as the ratio of age-specific male numbers weighted by age-specific first marriage frequencies, to age-specific female numbers weighted by the corresponding first marriage frequencies (Jiang et al. 2011).

[2] The age range was restricted to ages 15–60, and it was assumed that the SRB drops to 110 between 2010 and 2030 and then to 106 by 2050. Jiang et al. (2011) then predicted the first marriage ratio in the marriage market from 2010 to 2050, as well as the number and proportion of surplus males.

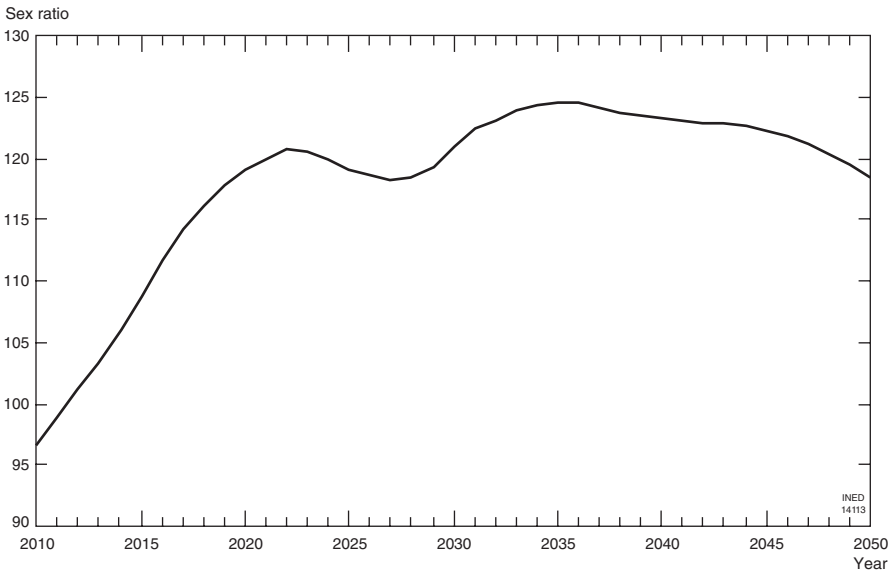



**Fig. 5.3** Sex ratio of potential first-marriage partners each single year from 2010 to 2050 (men per woman) (Source: Authors' calculations)

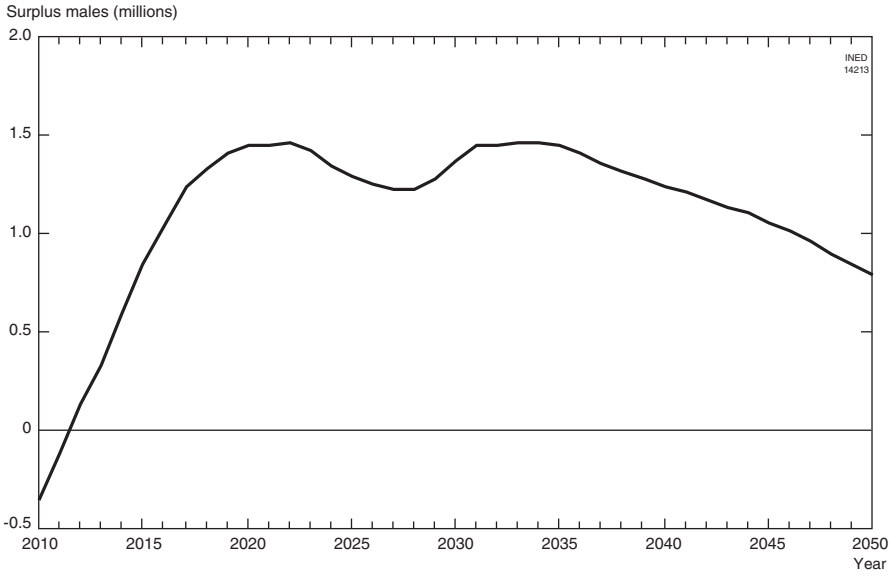



**Fig. 5.4** Number of surplus males each single year from 2010 to 2050 (in thousands) (Source: Authors' calculations)

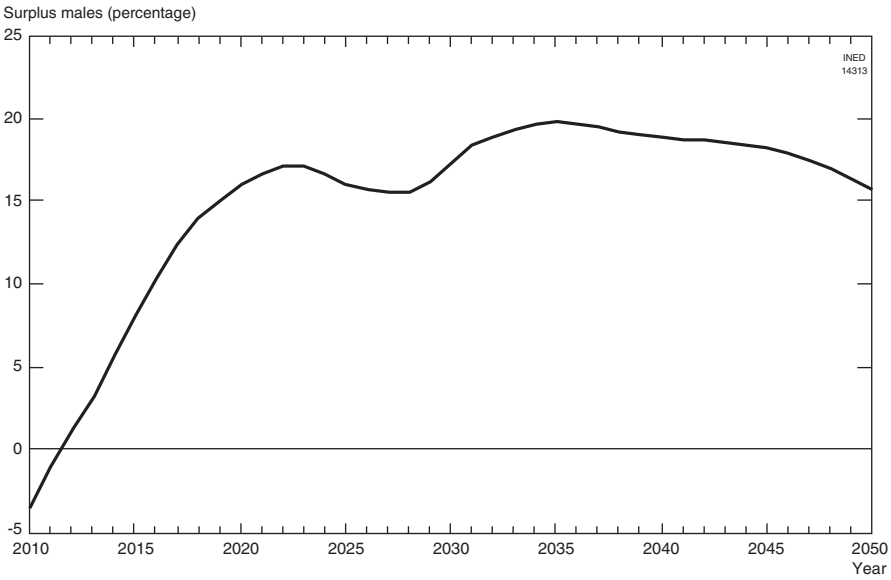



**Fig. 5.5** Percentage of surplus males each year from 2010 to 2050 (Source: Authors' calculations)

Figures 5.4 and 5.5 display logically similar trends to those evidenced in Fig. 5.3. It appears from our calculation[3] that there will be more than 1 million surplus males in the marriage market each single year between 2016 and 2046, and that their number will even exceed 1.4 million annually in the two five-year periods 2018–2023 and 2031–2036. Starting from the late 2010s, the male surplus will exceed 15%, peaking at 17%–20% between 2030 and 2047.

## 5.5 The Male Marriage Squeeze and its Implication for Society and Individuals

In Chinese society today, heterosexual marriage remains a social prerequisite for marital-type cohabitation and family formation (Attané et al. 2013). As great store is set on marriage, failing to marry affects many aspects of an individual's life (Li et al. 2010). In addition, in the traditional family, a young man's marriage is not just a personal matter but is important for his family and the local community

[3] The number of surplus males in the marriage market each single year is obtained by calculating the difference between the number of potential first-marriage males (calculated as the sum of the age-specific male numbers weighted by the corresponding age-specific first-marriage frequencies for males) and of potential first-marriage females for a given year. The proportion is the quotient of the difference divided by the sum of potential first marriage males over the age range.

as well. As a result, being unable to marry and therefore remaining a lifelong bachelor can have multi-dimensional consequences for the men concerned (Attané et al. 2013).

### 5.5.1 *Impact of Lifelong Bachelorhood on Bachelors Themselves and Their Families*

Marriage in China is not only a matter of "personal face" but also involves the family's honour and the continuity of the family line. Although an increasing number of young adults in urban areas are now making the choice to delay marriage or remain single, for most men in rural areas, the failure to marry is still socially stigmatized: it not only creates feelings of isolation and social uselessness for the men themselves (Attané et al. 2013; Li et al. 2010), but also has negative impacts on their families' social status in the community (Jiang and Sánchez Barricarte 2013).

Available research indicates that lifelong male bachelors in rural areas have a lower level of life satisfaction than married males, as they have no one to share their daily life and take care of them. In addition, they have higher rates of depression than married males, often because of the tremendous social pressure to marry exerted upon them by their immediate family and other relatives, especially if they are the oldest son (Li et al. 2009; Attané et al. 2013), to the extent that some of them are even driven to suicide (Jiang and Li 2009). In their village community, lifelong bachelors are often treated differently from married men, and sometimes suffer from social exclusion as they tend to participate less in the main events of social life, such as funerals and weddings, and have fewer social interactions with their peers than married men.

Another issue for lifelong bachelors concerns their old age. In Chinese culture, the elderly are traditionally supported by their offspring, generally their sons. But in rural China, no marriage overwhelmingly means no children, and therefore no old-age support as there is no universal pension system. In addition, parents are likely to receive less economic support from an unmarried son in their old age, as most lifelong bachelors are themselves in poverty (Attané et al. 2013; Jiang and Li 2009).

Chinese parents consider a child's marriage as one of their biggest responsibilities, and to achieve this goal they may have to save every penny, sometimes taking out large loans to pay a bride-price or even to illegally "purchase" a trafficked woman for their son (Jiang and Sánchez-Barricarte 2012). As a consequence, parents who fail to marry their child, in particular their son, are often looked down upon, suffer from discrimination within their community, and therefore have feelings of social inferiority and helplessness with respect to the son who cannot marry. Further, as older unmarried males have little to do all day, problems with gambling and alcohol abuse may arise, causing psychological distress to their families (Xu and Liang 2007). Some parents blame themselves for not fulfilling their duties, and family relations may become strained as family members quarrel about the son's marriage (Jiang and Li 2009). Such great store is set on marriage in rural

China that men who cannot find a spouse by resorting to traditional channels adjust their marriage strategy and lower their standards for a spouse. In particular, the male marriage squeeze may challenge the social stigma on widowed and divorced women's remarriage. One mother of an unmarried man explains, for instance, that she would be happy for her son to find a wife, whatever her status may be, e.g. widowed, divorced, or even disabled (Mo 2005). Sun (2005) suggests that alternative forms of marriage, such as child brides, or exchanging girls as brides between two families, may become more frequent in poverty-stricken areas. Commodification and trafficking of women may also expand due to increasing demand for brides by rural unmarried men (Attané 2013).

### *5.5.2 The Influence on Local Community*

There have been many recent reports on the existence of "bare-branch[4] villages", i.e. villages where a significant share of the male population is still unmarried and unlikely to marry in the future. In a mountain village in south-western Guizhou, there are 2,249 inhabitants in total, with 282 "bare branches" accounting for 20% of all men (He 2007). In Yanbian prefecture in Jilin, there are more than 13,000 "bare branches", and it is not uncommon to see two or three in a single family (Xu and Liang 2007). In a village in central Hubei, "bare branches" account for more than 10% of the village population, with one in almost every household (Wang et al. 2008).

At local level, the numerical sex imbalance among young adults is often aggravated by differential migration. In Qitai county in northwest Xinjiang province, for instance, among the 400 or so young people who have migrated to cities since 1993, 75% are women. One village official explained: "There are 4,000 inhabitants in our village, and more than 400 men have been unable to marry. We are a suburban village which is short of women although conditions are good". Thus, it is not just the remote poor villages that are likely to experience a male marriage squeeze (Zhong and Liu 2006).

Female internal labour migration increased significantly from the late 1980s, together with the gradual expansion of the marriage radius for rural women, who more and more frequently marry a man outside their home county, city, or province (Tan et al. 2003). As is the case for rural men, the push factors underlying female migration are linked to poor local living conditions: inadequate transportation, economic backwardness, and difficulties in improving living standards (Shi 2006). While labour migration can to some extent satisfy rural women's desire for a better life and personal development, in the long run marriage migration to more well-off and urbanized regions often becomes a strategy for upward social mobility among

[4] "Bare branches" is an expression that applies to men who, being unable to marry, cannot form a family since, under prevailing social and familial norms, growing new branches on the family tree is impossible without marriage (Attané et al. 2013).

women in poor rural areas. As a consequence, men living in the more remote and underdeveloped rural areas are at a disadvantage in the squeezed marriage market, because their geographical location and poor economic conditions are not attractive to local women. Even when these men migrate temporarily to cities to get better jobs, they often return to their hometown on a seasonal basis and, due to their low level of skills and education, are unable to settle permanently in the city. In the context of numerical sex imbalance on the marriage market, these men therefore form the most vulnerable groups in terms of marriage opportunities (Shi 2006). Their chances of marrying may be even further compromised by an inability to meet the rising costs of marriage – including bride price and the costs of the ceremony itself (Attané et al. 2013). In China as in other societies, poverty tends to exclude the poorest section of the male population from marriage (Li et al. 2010)

At the community level, the emergence of "bare-branch" groups may have various consequences. A survey conducted in 364 villages from 28 provinces nationwide indicates that these lifelong bachelors are often negatively perceived: they are regularly accused of gambling, stealing, making local women engage in non-marital love affairs with them, and even causing social anomie (Jin et al. 2012).

### *5.5.3 Potential Effects on Public Health*

In societies with male-biased sex ratios, a significant increase in the numbers of male bachelors is said to be an important driving force in the development of the sex industry and prostitution (Courtwright 2001). Given the Chinese context, in which condom use is extremely infrequent, the development of commercial sex may lead to the spread of sexually transmitted diseases (Hershatter 1997).

Lacking a stable sexual partner within heterosexual marriage, male bachelors resort more frequently to commercial sex with prostitutes (Merli et al. 2006; Li et al 2010). In a survey conducted in Anhui Province in 2008, 30% of the interviewees admitted paying for sex at least once, and the proportion whose first sex or last sex was with a sex worker was six to seven times higher than for the married male respondents. This could provide an opportunity for the spread of HIV, with the bare branches becoming HIV carriers as they seldom use condoms (Zhang et al. 2011; Yang et al. 2012). Chen et al. (2007) analysed HIV rates among a sample of patients being treated for sexually transmitted infections in 14 clinics in Guangxi and concluded that "China's imbalanced sex ratios have created a population of young, poor, unmarried men of low education who appear to have increased risk of HIV infection".

Models that take account of the male-biased sex structure and the prevalence of unprotected sexual intercourse between male bachelors and sex workers show that the HIV infection rate will increase rapidly, although estimated rates vary (Merli et al. 2006; Ebenstein and Sharygin 2009). The more pessimistic scenarios indicate that the adult HIV-positive prevalence rate may rise to 3% by 2050 (Merli et al. 2006).

### 5.5.4 Potential Impact on Violent Behaviours

Some studies support the idea that anti-social behaviours, such as violence and even criminality may be positively correlated with the male surplus, and suggest that crime rates are much higher among unmarried men than among married ones (Mazur and Michalek 1998). For India, which also has a surplus of males in its adult population, Dreze and Khera (2000) suggest that, after controlling for other related variables such as urbanization and poverty, the sex ratio is positively correlated with murder rates; the higher the male surplus, the higher the crime rate. In analysing the data in 26 provinces of China from 1988 to 2004, Edlund et al. (2007) also found that the sex ratio of the population aged 16–25 has a significant impact on crime levels: when the sex ratio increases by 3 %, crimes of violence and against property rise by about 3 %. A correlation between male surplus and the prevalence of crime, which has been evidenced on the basis of national data in 70 countries (Barber 2000), is also anticipated for China (Hudson and den Boer 2004). According to these authors, males who cannot marry, and who are mostly at the bottom of the social hierarchy, may tend to resort to violence to get what they cannot obtain through legal channels. Although convincing evidence of this relationship is still lacking, some research indicates that as they age, male bachelors sometimes suffer from psychological impairment that could lead to violent behaviours (Peng 2004).

### 5.5.5 Can the Female Shortage Improve Women's Social Status?

When there is a male surplus in the marriage market, one expects women to be in a stronger position: they can increase their bargaining power in regions with a significant male-biased sex imbalance, and have a greater say in household decisions and investments (Porter 2009). Research in Vietnam has also confirmed that the shortage of women in some regions has improved their bargaining power in marital transactions (Bélanger 2011).

In China's patriarchal and patrilocal system, bride-price occupies a central position in the marriage process, so competition for women is leading to bride-price inflation (Becker 1991). In order to increase their chances of attracting a potential wife in a very competitive marriage market, men must pay a higher bride-price, which appears to be closely connected with the surplus of males in various areas (Chen 2004). In a male-dominated society, bride-price is still a symbol of value and dignity for a woman, with a high bride-price representing the high value of the bride, which improves the status of the bride's family. In Xiajia village in Northern China, for instance, the bride-price has increased 140-fold in the past 50 years, from 200 Chinese yuan in the early 1950s to 28,500 yuan in the late 1990s (Yan 2003). The bride-price has risen 70-fold in the past 30 years in Zhao village in Gansu, and in the late 1990s, it was the equivalent of 20 years' average per capita income (Sun 2005). To some extent, the bride-price reflects a young woman's value: today, marriage

can entail building a new house, buying expensive household appliances, and so on. These things can cost the groom's family many years of savings (Jia 2008).

Although women's bargaining power has improved in the male-squeezed marriage market, the shortage of women may not have enhanced their social status. Discrimination against unborn girls today is a reflection of the low status of women (Attané 2013). A high sex ratio at birth and female child mortality mean that unborn and infant females have been deprived of the right to live due to gender discrimination. This not only violates the constitution and laws of China, but also breaches international covenants on human rights. Men tend to be dominant in the decisions about number and gender of offspring, and women can suffer great psychological distress and sacrifice their health to satisfy men's preference for a child's gender. In today's China, females are at a disadvantage in access to social public resources, which hinders their personal development (Ma 2004).

Another issue raised by the imbalanced sex structure is that women are increasingly likely to be abducted, trafficked and commercialized to compensate for the shortage of potential female spouses, and sold to men who can afford to pay for them (Attané 2013). In some traditional views, a person can be treated as goods to trade, and some Chinese people still hold the opinion that spending money to buy a wife is a "fair deal". Once women from other places have been trafficked to a village, the villagers sometimes conspire to prevent these women from running away, and even to prevent their rescue (Peng 2004; Sun 2004). Some grass-root cadres regard human traffickers as simple matchmakers and treat the crimes of abduction and sale of women as a necessary evil, offering a solution for villagers who would otherwise be unable to find a spouse (Sun 2004).

The shortage of women may improve women's bargaining power in some respects, but has not radically transformed people's perception of gendered roles, nor has it fundamentally enhanced women's social status. On the contrary, men's demand for marriage and sex often encourage crimes against women, such as abduction, rape, forced marriage and enslavement (Jin et al. 2012). The shortage of women and their scarcity in the marriage market has not reversed the gender relationship whereby "the status of men is higher than women", but has further jeopardized the rights and interests of females (Attané 2013).

## Conclusion

The young cohorts entering the marriage market will be increasingly male-biased, with the result that, until the mid-century at least, millions of men in China will be unable to marry. As demonstrated above, this new demographic concern is liable to have various consequences for society, families and individuals.

In a family-based society like China, men who cannot marry are subject to social discrimination and pressure, and so are their families. A considerable fraction of the Chinese men experiencing involuntary prolonged or even permanent bachelorhood go through life as second-class citizens, as certain prerogatives of what is considered

in most societies as an ordinary life are partially or totally inaccessible to them: they are unable to enjoy sexual activity with a regular partner, raise children or share their daily life with a spouse. In many parts of rural China, all of these basic expectations remain the preserve of married men (Attané et al. 2013). Compared to married men, the "bare branches" often have fewer social interactions, have weaker social networks, and more rarely participate in community activities (Jiang and Sánchez Barricarte 2013; Li et al. 2010). They are also exposed to increased risk to their sexual health, as they more frequently have casual partners, including prostitutes, than married men, and seldom use condoms (Yang et al. 2012), and this could accelerate the expansion of the HIV-AIDS epidemic.

As far as can be assessed by available studies, the consequences of the male marriage squeeze will be overwhelmingly negative, with probably only meagre benefits for society and individuals. In response to this trend, major social changes will necessarily occur. Among the positive changes, there may arguably be a loosening of the social and traditional norms governing family arrangements and sexual behaviour in China (Attané et al. 2013). The full range of possible future changes is not yet well defined, however, opening the way for further research.

## References

Attané, I. (2013). *The Demographic masculinization of China. Hoping for a son*. Dordrecht: Springer.

Attané, I., Zhang, Q., Li, S., Yang, X., & Guilmoto, C. Z. (2013). Bachelorhood and sexuality in a context of female shortage: Evidence from a survey in rural Anhui, China. *The China Quarterly, 215,* 1–24.

Barber, N. (2000). The sex ratio as a predictor of cross-national variation in violent crime. *Cross-Cultural Research, 34*(3), 264–282.

Becker, G. S. (1991). *A treatise on the family*. Massachusetts: Harvard University Press.

Bélanger, D. (2011). The impact of transnational migration on gender and marriage in sending communities of Vietnam. *Current Sociology, 59*(1), 59–77.

Chen, Y. (2004). *Zhongguo he Ouzhou hunyin shichang toushi (A Look at the Marriage Market in China and Europe)*. Nanjing: Nanjing University Press.

Chen, Y. (2006). Guanggun jieceng jiuyao chuxian (A class of bare branches is forming). *Baike zhishi, 28*(5), 52–53.

Chen, X., Yin Y., Tucker, J. D., Xing, G., Chang, F., Wang, T., Wang, H., Huang, P., & Cohen, M. S. (2007). Detection of acute and established HIV Infections in sexually transmitted disease clinics in Guangxi, China. *Journal of Infectious Diseases, 196*(11), 1654–1661.

Courtwright, D. T. (2001). *Violent land, single men and social disorder from the frontier to the inner city*. Massachusetts: Harvard University Press.

Das Gupta, M., Chung, W., & Li, S. (2009). Evidence for an incipient decline in numbers of missing girls in China and India. *Population and Development Review, 35*(2), 401–416.

Dreze, J., & Khera, R. (2000). Crime, gender, and society in India: Insights from homicide data. *Population and Development Review, 26*(2), 335–352.

Ebenstein, A., & Sharygin, E. J. (2009). The consequences of the "missing girls" of China. *The World Bank Economic Review, 23*(3), 399–425.

Edlund, L., Li, H., Yi, J., & Zhang, J. (2007). *Sex ratios and crime: Evidence from China's one-child policy*. IZA Discussion Paper No 3214.

Guilmoto, C. Z. (2012). Skewed sex ratios at birth and future marriage squeeze in China and India, 2005–2100. *Demography, 49*(1), 77–100.
He, H. (2007). Guizhou Paifang cun: 282 tiao guanggun de xinlingshi (Paifang village in Guizhou Province: The mental history of 282 bachelors). *Xiangzhen luntan, 19*(18), 20–23.
Hershatter, G. (1997). *Dangerous pleasures: Prostitution and modernity in twentieth-century Shanghai*. Berkeley: University of California Press.
Hudson, V. M., & Den Boer, A. M. (2004). *Bare branches: The security implications of Asia's surplus male population*. Cambridge: MIT Press.
Jia, Z. (2008). Renkou liudong beijing xia nongcun qian fada diqu nan qingnian hunyin kunnan wenti fenxi—yi Fenshuiling weili (Young men's difficulties to marry in a context of migration: a case study of Fenshuiling Village). *Qingnian yanjiu, 31*(3), 37–42.
Jiang, Q., & Li, S. (2009). *Nvxing queshi yu shehui anquan* (*Female Deficit and Social Stability*). Beijing: Social Sciences Press.
Jiang, Q., & Sánchez Barricarte, J. J. (2012). Bride price in China: The obstacle to 'Bare Branches' seeking marriage. *The History of the Family, 17*(1), 2–15.
Jiang, Q., & Sánchez Barricarte, J. J. (2013). Socio-demographic risks and challenges of bare-branch villages in China. *Asian Social Work and Policy Review, 7*(2), 99–116.
Jiang Q., Li S., & Feldman, M. W. (2011) Demographic consequences of gender discrimination in China: simulation analysis of policy options. Population Research and Policy Review, 30, 619–638.
Jin, X., Liu, L., Li, Y., Feldman, M.W., & Li, S. (2012). *Gender imbalance, involuntary bachelors and community security: Evidence from a survey of hundreds of villages in rural China*. Paper presented at the Annual Meeting of the Population Association of America, May 3–5, San Francisco, USA.
Liu, H., Li, S., & Feldman,M. W. (2012). Forced bachelors, migration and HIV transmission risk under China's gender imbalance: A meta-analysis. *Aids Care, 24*(12), 1487–1495.
Li, X. H. (2013, March 5). Woguo ying'er xingbiebi silianjiang (China's sex ratio at birth has been declined for four consecutive years). Renmin ribao.
Li, S., Jiang, Q., & Feldman, M. W. (2006). *Xingbie qishi yu renkou fazhan (Gender discrimination and population development)*. Beijing: China Social Sciences Press.
Li, Y., Li, S., & Peng, Y. (2009). Nongcun daling weihun nanxing yu yi hun nanxing xinli fuli de bijiao yanjiu (A comparison of psychological wellbeing between forced bachelor and married male). *Renkou yu fazhan, 15*(4), 2–12.
Li, S., Zhang, Q., Yang, X., & Attané, I. (2010). Male singlehood, poverty and sexuality in rural China: An exploratory survey. *Population, 65*(4), 16–32.
Ma, Y. (2004). Cong xingbie pingdeng de shijiao kan chusheng yinger xingbiebi (The sex ratio at birth from the perspective of gender equality). *Renkou yanjiu, 28*(5), 75–79.
Mazur, A., & Michalek, J. (1998). Marriage, divorce, and male testosterone. *Social Forces, 77*(1), 315–330.
Merli, M. G., Hertog, S., Wang, B., & Li, J. (2006). Modelling the spread of HIV/AIDS in China: The role of sexual transmission. *Population Studies, 60*(1), 1–22.
Mo, L. (2005). *Chusheng renkou xingbiebi shenggao de houguo yanjiu (A study of the consequence of the increased sex ratio at birth)*. Beijing: Chinese Population Press.
NBS. (2000–2009). Quanguo renkou biandong qingkuang chouyang diaocha (Annual surveys on population change). http://www.stats.gov.cn/. Accessed 22 Nov 2013.
PCO. (1985). *Population Census Office and National Bureau of Statistics of China. Zhongguo 1982 nian renkou pucha ziliao (Tabulation on the 1982 Population Census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.
PCO. (1993). *Population Census Office and National Bureau of Statistics of China. Zhongguo 1990 nian renkou pucha ziliao (Tabulation on the 1990 Population Census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.
PCO. (2002). *Population Census Office and National Bureau of Statistics of China, Zhongguo 2000 nian renkou pucha ziliao (Tabulation on the 2000 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.

PCO. (2012). *Population Census Office and National Bureau of Statistics of China, Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.

Peng, Y. (2004). Pinkun diqu daling qingnian hunyin shipei xianxiang tanxi (Marriage mismatch of elder youth in poor areas). *Qingnian yanjiu, 22*(6), 18–20.

Porter, M. (2009). *The effects of sex ratio imbalance in China on marriage and household decision*. Working paper, University of Chicago, Department of Economics.

Poston, D. L., Conde, E., & De Salvo, B. (2011). China's unbalanced sex ratio at birth, millions of excess bachelors and societal implications. *Vulnerable Children and Youth Studies, 6*(4), 314–320.

Shi, R. (2006). Qingnian renkou qianchu nongcun dui nongcun hunyin de yingxiang (The influence of the emigration of young people on marriage in rural areas). *Renkou yanjiu, 28*(1), 32–36.

Sun, L. (2004). *Dangdai zhongguo guaimai renkou fanzui yanjiu (Study on crimes of human trafficking in contemporary China)*. Doctoral dissertation, East China University of Political Science and Law.

Sun, S. (2005). *Nongmin de ze'ou xingtai—dui xibei Zhaocun de shizheng yanjiu (Forms of mate-selection among farmers: Study on Zhaocun, Northwest China)*. Beijing: Social Sciences Academic Press.

Tan, L., Short, S. E., & Liu, H. (2003). Shuangchong wailaizhe de shenghuo—nvxing hunyin yimin de shenghuo jingli fenxi (The life of "double outsiders": An analysis of the experience of women marriage migrants). *Shehuixue yanjiu, 18*(2), 75–83.

Tao, T., & Zhang, X. (2013). Liupu renkou shuju de loubao yu chongbao (Underreporting and over-reporting in China's sixth national population census). *Renkou yanjiu, 37*(1), 42–53.

Wang, S., Wu, M., & Guo, Z. (2008). Hubei xuan'enxian changtanhe dongzuxiang chenjiataicun weihe guanggun duo (Why there are so many bachelors in Chen Jiatai village, Hubei). *Minzu dajiating, 26*(1), 20–22.

Wei, S., & Zhang, X. (2011). The competitive saving motive: Evidence from rising sex ratios and savings rates in China. *Journal of Political Economy, 119*(3), 511–564.

Xu, J., & Liang, X. (2007). Yanbianzhou nongcun daling weihun nan qingnian qingkuang diaocha baogao (Investigation report on the situation of rural unmarried male above the normal age for marriage in Yanbian). *Renkou xuekan, 28*(4), 63–65.

Yan, Y. (2003). *Private life under socialism: Love, intimacy, and family change in a Chinese village, 1949–1999*. Stanford: Stanford University Press.

Yang, X., Attané, I., Li, S., & Zhang, Q. (2012). On same-sex sexual behaviors among male bachelors in rural China: Evidence from a female shortage context. *American Journal of Men's Health, 6*(2), 108–119.

Zhang, Q., Attané, I., Li, S., & Yang, X. (2011). Condom use intentions among "forced" male bachelors in rural China: Findings from a field survey conducted in a context of female deficit. *Genus, LXVII*(1), 21–44.

Zhong, L., & Liu, B. (2006, March 2). Xinjiang qitai wuqian danshenhan pan xifu (Five thousand bachelors hope to have wives in Qitai county, Xinjiang). Zhongguo qingnianbao.

# Chapter 6
# Being a Woman in China Today: A Demography of Gender

**Isabelle Attané**

After three decades of Communism followed by three decades of economic liberalism, Chinese society remains, in many ways, very attached to its social and family traditions (Whyte 2005; Silverstein et al. 2006). In recent years, however, it has shown a remarkable faculty for adapting to the process of globalization in which it is now a stakeholder. Since they can prove difficult to interpret, the transformations that have affected China since the 1980s may sometimes seem perplexing. Indeed, it is not always easy to distinguish between changes that are part of the continuity of longstanding social practices, and others, sometimes sudden, that are the *ad hoc* expressions of a reaction to the new constraints and opportunities imposed by socio-economic changes and a globalized society. Indeed, the analysis of social transformations — just as much as economic and political ones — is sometimes so intricate that it quite rightly leads us to conclude that paradoxes exist (Faure and Fang 2008; Rocca 2010; Whyte 2004).

The attitude of Chinese society towards women, also rich in paradox, testifies to this duality — itself all the more complex to understand because still marked by the quest for gender equality that prevailed during the Communist era. Nonetheless, it remains essential to understand and measure transformations in the status of women since the economic reforms if we are to arrive at a more global understanding of contemporary Chinese society, its representations, and the changes it is experiencing. In fact, the place given to women, as measurable using the various indicators of education, employment, demography and health, is a generally reliable indicator of the radical changes affecting society. Yet this is a paradox in itself: although in certain respects, notably regarding education and health, absolute improvement in the situation of Chinese women is indisputable, in others, their relationships with men remain all the more unequal for being part of a demographic context that is unfavourable to them, thereby testifying to an unquestionable deterioration in certain aspects of their situation.[1]

[1] See for instance Chap. 5 in this book.

I. Attané (✉)
Institut national d'études démographiques, Paris, France
e-mail: attane@ined.fr

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_6, 

The aim of this chapter[2] is first, to draw up a socio-demographic inventory of the situation of Chinese women in the prevailing early twenty-first century context of demographic, economic and social transition, and second, to draw attention to the paradoxical effects of these transitions, whilst taking into account the diverse realities that women are experiencing. The chapter is based mainly on the partial results of three surveys on the social status of women (*Zhongguo funü shehui diwei chouyang diaocha*) carried out jointly by the All China Women Federation and the National Bureau of Statistics in 1990, 2000 and 2010. These surveys (referred to here as ACWF-1990, ACWF-2000 and ACWF-2010), organized with the specific aim of measuring inequality between the sexes and gender differences, paint a wide-ranging picture of the social realities experienced by Chinese women over the last two decades.[3] These are the only existing surveys on these issues, but their scope is limited by the closed questionnaire data collection method. Yet although they do not provide all the explanations, they nonetheless enable us to understand the processes at work with regard to women and gender relationships. The data from these surveys will occasionally be supplemented by data taken from other sources, notably the 1990, 2000 and 2010 censuses.

## 6.1 Women's Rights and Interests: The Long March of Chinese Women

China is one of the world's developing countries in which demands for the emancipation of women and the struggle for equality between the sexes are both among the most longstanding political concerns—the first movements in favour of women date back to the mid-nineteenth century (Elisseeff 1988)—and the most in evidence today. As early as the 1950s, practical initiatives were developed to promote women's work outside the home and the equality of spouses within the family (Johnson 1983). China was also one of the first countries to ratify, in 1980, the United Nations International Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW).

The relatively early mobilization of the state and civil society partly explains why China now possesses a solid body of legislation for the defence of women's rights and interests. Thanks to the 1954 Constitution, followed by that of 1982, the law gives men and women equal rights: "Women have the same rights as men in

[2] This chapter is the partial reproduction of an article published in the academic journal *China Perspectives* in late 2012 (Attané 2012).

[3] These surveys in the form of questionnaires were each given to representative samples of tens of thousands of women and men aged 18–64 from different provinces and communities (urban, rural, population with experience of migration, Han/ethnic minorities, etc.). The quantitative data obtained was supplemented by information taken from in-depth interviews and discussion groups. For more details on the samples and methodology of these surveys, see ACWF (2000) and ACWF (2010). With no access to raw data, the results presented here were taken from the Executive Reports.

all spheres of political, economic, cultural and social life, including family life".[4] This equality of rights and the fight against discrimination have been regularly confirmed, mainly in successive laws on marriage, by the "Law on the Protection of Rights and Interests of Women" (1992) and the "Law on Maternal and Infant Health Care" (1994) (ACWF 2012).

This major mobilization on the part of China goes hand in hand with international initiatives in favour of the autonomy of women and gender equality. In particular, the Chinese government quickly understood that the legitimacy of the country as a leading world power depended on its adhesion to major international principles, notably those relating to the rights of women, and that it was important to support the quest for gender equality in order to ensure harmonious, sustainable development within the globalization process. Besides this, in the 1990s, China became aware that some women had remained on the sidelines of the modernization process and that their situation had, subsequent to the economic reforms, become very unequal, depending on their place of residence and their social class, especially with regard to their needs in terms of subsistence, and the development and preservation of their rights and interests. The Chinese government therefore rapidly echoed the United Nations International Conference on Population and Development (in Cairo in 1994) and the 4th World Conference on women (in Beijing in 1995) which marked a decisive step in the promotion of women's status in the world[5] as did the Millennium Development Goals (MDGs).[6] From then on, the rights and interests of women and their equality with men remained permanently on the political agenda, notably through three successive programmes for the development of women (*Zhongguo funü fazhan gangyao*) launched from 1995.[7] Lastly, the political objective of reducing social and economic inequalities, which since the 2000s has been an important element in the development of a "harmonious society" (*hexie shehui*) may also benefit women, in particular by ensuring a more rigorous application of the laws that protect them and by facilitating access to health, education, social security cover, and employment (Burnett 2010).

The Chinese government's stance on women's rights and gender equality has not, however, put an end to traditional stereotypes of the roles and duties of men

[4] Excerpt from Chap. 48 of the Constitution of the People's Republic of China, 1982.

[5] "The emancipation and empowerment of women and improvements in their political, social, economic and health status is an end in itself"; "The fundamental rights of women and girls are inalienable and indivisible from the universal rights of Man" (Excerpts from the Program of Action of the 4th World Conference on Women held in Beijing, 4–15 Sept 1995).

[6] The member-states of the United Nations agreed on eight essential goals to be reached by 2015. The Millennium Development Goals (MDGs) are the following: to eradicate extreme poverty and hunger; to achieve universal primary education; to promote gender equality and empower women; to reduce infant mortality; to improve maternal health; to combat HIV/AIDS, malaria and other diseases; to ensure environmental sustainability; to develop a global partnership for development.

[7] These three programmes of action for women's development covered, respectively, the three following periods: 1995–2000, 2001–2010 and 2011–2020. See for instance Program for the Development of Chinese Women 2001–2010. Available at www.china.org.cn/english/features/cw/140979.htm. Accessed 10 Nov 2013.

and women within the family and society, far from it; nor to the often very unequal situations they generate — in particular since the economic reforms (Wang 2010). In 1994, a State Council document (1994) stipulated that: "China subscribes to the principle of gender equality set down in the United Nations Charter and promises to respect it. The Government is convinced that equality between the sexes will become a reality to the extent that women will be able to participate in development as equal partners of men". (Attané 2005) A decade later, however, the Chinese government recognized that "deep-seated inequalities continue to exist between regions regarding the status of women, traditional gendered stereotypes persist, the rights of women are ignored in many places (and that) a great deal of work remains to be done to improve the situation of Chinese women if their equality with men is to become a reality".[8] Even in 2011, the further deterioration of the sex ratio at birth revealed by the sixth census (2010), resulting from massive discrimination against little girls, led President Hu Jintao to confirm the persistence of significant inequalities between the sexes.[9]

## 6.2 Education, Employment, Wages: Chinese Women Still Lag Behind

Differences in treatment of men and women are visible in many areas of society. In China, gender inequalities are prevalent not only in access to education, employment and health, but also in the rules of inheritance, wages, political representation and decision-making within the family (Bossen 2007; Tan 2006).

Education is a key factor in improving women's status in that it tends to reduce the fertility rate and encourages women to take better care of their health (Bongaarts 2003). Above all, by facilitating access to worthwhile, decently-paid jobs, it favours their economic emancipation and in the process — since it changes their power relationship with men — their emancipation within the family. From this point of view, great progress has been made in recent years. Firstly, the spread of primary education amongst the younger generations has significantly reduced the percentage of women aged 18–64 with no education. By 2010 it had fallen to 6.6% in rural areas and to 3.5% in urban areas (Table 6.1). Improvements can also be seen in access to secondary and higher education, with a tripling of female enrolment in rural areas between 1990 and 2010, and a doubling of the proportion in urban areas. Although secondary and higher education remain, on the whole, the preserve of a minority of Chinese women (scarcely more than a third of them have access to one and/or the other), recent changes have been

[8] Gender Equality and Women's Development in China, available on China.org.cn, China Publishes Gender Equality White Paper. Available at www.china.org.cn/english/2005/Aug/139404.htm. Accessed 25 Sept 2012.

[9] Census data demonstrates positive changes in China over the past decade. Available at http://english.peopledaily.com.cn/90001/90776/90882/7366454.html. Accessed 25 Sept 2012.

**Table 6.1** Women's level of education, 1990–2010

| | 1990 | | 2000 | | 2010 | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Urban | Rural | Urban | Rural |
| *Distribution of women by educational level (%)* | | | | | | |
| No education | 10.9 | 34.7 | 20.8 | 58.8 | 3.5 | 6.6 |
| Primary level education | 19.8 | 36.1 | | | 10.3 | 29.4 |
| At least secondary education | 36.1 | 6.7 | 44.4 | 8.4 | 54.2 | 18.2 |
| *Average length of education (in years)* | | | | | | |
| Women | 4.7 | | 6.1 | | 8.8 | |
| Men | 6.6 | | 7.6 | | 9.1 | |

Source: ACWF (2010)

undeniably positive: in 20 years, the average length of women's education has almost doubled, from 4.7 years in 1990 to 8.8 in 2010, thereby gradually narrowing the gap with men, (who had 6.6 years of schooling on average in 1990 and 9.1 years in 2010) (Table 6.1).

Although in urban areas in the east of the country young people of both sexes now have relatively egalitarian access to educational resources, considerable geographical disparities still remain, particularly in rural areas. In 2010, in the centre and west of the country, for example, rural women had attended school for only 6.8 years on average, 2.2 years less than those living in the rural zones of the municipalities of Beijing and Tianjin (ACWF 2010). It is true that in country areas, the added-value of education, in particular for girls, is not always understood, especially now that the costs have become prohibitive for many families since the reform of the education system in the 1980s. As a general rule, family expectations for girls remain lower than for boys, although the gender gap in this respect is narrowing (Adams and Hannum 2008). In fact, the ACWF (2000) survey shows that leaving school early is more frequently the parents' decision in the case of girls (36.8%) than in the case of boys (27.9%). Although financial difficulties remain an important reason for leaving school early for boys as well as girls (for 69.8 and 68.1%, respectively), more parents nonetheless consider education to be unnecessary for girls (for 9.1% of girls versus 3.5% of boys).

Chinese women's employment situation has also changed radically over the last twenty years, but in a way that is considerably less favourable to them. Although sparse, data from surveys on the status of women — partially supplemented by data from censuses — shows that the female employment rate is still among the highest in the world. In the country as a whole, almost three in four women are in paid employment, a very high level compared with the other large countries in the region. In India, for example, only slightly over one in three women were officially employed in 2009, and in Japan, the Republic of Korea and the Philippines, the figure is below one in two (CILC 2011).

The relative advantage of Chinese women is fragile, however. Indeed, as with men, though to a lesser extent, employment rates for women have fallen significantly since the 1990s, mainly in urban areas. Particularly affected by the redundancies

**Table 6.2** Employment and income for women and men 1990–2010

| | 1990 | | | 2000 | | | 2010 | | |
|---|---|---|---|---|---|---|---|---|---|
| | China | Urban areas | Rural areas | China | Urban areas | Rural areas | China | Urban areas | Rural areas |
| *Percentage in paid work in the week preceding the survey (ACWF surveys)* | | | | | | | | | |
| Women | – | 76.3 | – | 87.0 | 63.7 | – | 71.1 | 60.8 | 82.0 |
| Men | – | 90.0 | – | 92.5 | 81.5 | – | – | – | – |
| *Employment rate at ages 20–59 years (censuses, in %)* | | | | | | | | | |
| Women | 84.3 | 77.4 | 87.1 | 79.5 | 63.1 | 88.9 | 73.6 | 60.8 | 84.4 |
| Men | 95.7 | 91.9 | 97.4 | 92.0 | 82.3 | 96.8 | 88.7 | 81.1 | 94.3 |
| *Average female income as a percentage of male income (ACWF surveys)* | | | | | | | | | |
| | – | 77.5 | 79.0 | – | 70.1 | 59.6 | – | 67.3 | 56.0 |

Sources: ACWF 2000, 2010; PCO 1993, 2002, 2012

that followed the dismantling of the labour units in the 1990s (Summerfield 1994; Wang 2010; Liu 2007) and with fewer chances than men of finding a new job (Zhi et al. 2012), large numbers of urban women are now returning to the home: in 2010, only 60.8 % were in paid work, compared to 76.3 % in 1990 (Table 6.2). The situation is even more flagrant in certain regions. In 2005, just 45 % of women were in employment in urban Jilin, and in urban Heilongjiang the figure was 35 % (ACWF 2008). Although rural women have not been totally spared by this trend, their effective participation in economic activities (mainly agricultural) remains far greater (82 % in 2010) than in urban areas. The gap between urban areas and the countryside is therefore widening, underlining the extent to which the reorganization and privatization of the Chinese economy, particularly in the industrial sector, is affecting female employment in the cities.

On the whole, while equality with men has never been attained, even during the collectivist period (Johnson 1983), Chinese women have, since the 1950s, gained more economic independence and are to a greater extent mistresses of their own personal and professional choices (Tan 2002; Yan 2006). In particular since the economic reforms, new opportunities have become available to them, in many cases as a result of the boom in higher education, which has enabled women to obtain more qualified and better-paid jobs than in the past (Angeloff 2010). A female elite is even emerging, embodied above all by the microcosm of female entrepreneurs whose social success has become one of the symbols of the Chinese economic boom (Song 2011; Deng et al. 2011). This phenomenon apart, the economic reforms have been harmful overall to women, in two ways in particular: first, because they are now more exposed to economic insecurity (linked mainly to unemployment, the difficulty of finding a new job and more frequent compulsory early retirement) than men, and second, because sexual discrimination in the labour market, from which they had been relatively sheltered by the employment system within the labour units, has made the gender equality promised to them, notably by the Constitution, an even more distant prospect (Burnett 1994). The employment market has become highly competitive and is now dominated by men. Many job offers are reserved

for men (CERN 2011) and women continue to hit the "glass ceiling" (Angeloff 2010). In addition, unemployment officially remains 50% higher for women than for men: 12% and 8% respectively in 2004 (ACWF 2008), and in 2010, twice as many women as men (10 versus 4.5% of men) reported being or having been the victim of discrimination in the workplace. For 70% of the women in this situation, the causes were stated to be unfair dismissal, mainly following marriage or pregnancy, an absence of promotion because of their gender, a lower wage than that of men doing the same work, and the disdain regularly displayed towards them in the workplace (ACWF 2010). Insecurity in the labour market quite logically makes women more vulnerable in economic terms since whilst a large majority of men aged 45–59 (87.1% in 2010) still live on income earned from work, this is only the case for 65.0% of women in the same age group. One in five (19.6%) is financially dependent on a member of her family, versus just 4.7% of men (PCO 2012).

Although the Communist era favoured the employment of women outside the home, it did not put an end to the social prejudices that place a lower professional value on women's skills than on those of men (Wei 2011). In 2000, a third of respondents (33.3% of women and 34.0% of men) did not refute traditional ideas whereby "man is strong, woman is weak" (*Nan qiang nü ruo*) or "men's abilities are naturally superior to those of women" (*Nanxing nengli tiansheng bi nüxing qiang*) (ACWF 2000). An independent survey (2009) confirmed the prevalence of this way of thinking, revealing that a third of respondents (37% of men and 33% of women) consider that if women have fewer career prospects it is because they have limited personal skills; for a further third (32% of men and 28% of women) the reason lies in their lack of physical resistance, and for a quarter[10] (22% of men and 28% of women), it is because they are less devoted to their work and their career plan is not sufficiently ambitious. The survey also indicated that the majority of women interviewed (77.6%) consider that employment opportunities for men and women are unequal, a view shared by the men, but to a lesser degree (66.4%) (Wei 2011). In addition, even though wage inequalities still exist, to the question "If a man and a woman do the same job but the man is paid more, what is your opinion of the situation?", 20.5% of men replied that this was "very common or only natural" (versus 7.9% of women), 41.8% thought it "unfair but acceptable" (versus 40.6% of women) and only 20.0% considered it "unfair and unacceptable" (42.9% of women) (Wei 2011).

Chinese society still continues to attribute different and well-defined roles and spheres of influence to men and women. However, as Harriet Evans (2008) has shown, this dichotomy is rarely challenged. In fact the majority of those questioned (61.6 and 54.8%, respectively, in 2010) continue to think that "men are turned towards society, women devote themselves to their family"(*Nanren yinggai yi shehui wei zhu, nüren yinggai yi jiating wei zhu*) (Fig. 6.1). Most surprising however, is that agreement with this belief has risen over the last decade amongst

[10] All the causes have not been given here. In total, all the causes combined exceed 100% because several answers could be given.

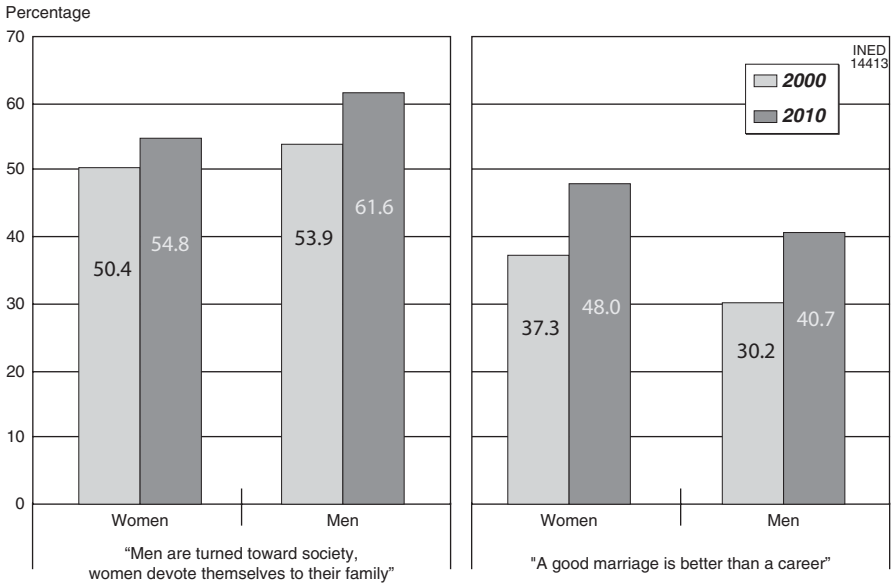



**Fig. 6.1** Acceptance of gendered roles by men and women (%) (Source: ACWF 2010)

both women and men (by 4 and 8 points respectively). Consistent with the previous statement but equally unexpected is the growing agreement with the idea that for women "a good marriage is better than a career" (*Gan de hao buru jia de hao*). This conviction, now shared by almost half of women (48.0% in 2010—i.e. 10 points more than in 2000—and 40.7% of men) reveals the deep-seated internalization of masculine domination, by women even more than by men. Moreover, it reinforces the fact that, unlike in western societies where women's work outside the home, on a par with that of men, is increasingly judged to be more valuable than domestic labour, no such trend is seen in China (Zuo and Bian 2001). Despite the obvious negative repercussions for the empowerment of women both in economic and symbolic terms, there is a strong move back towards traditional gendered roles. This has been reinforced by women's growing labour market insecurity — the better qualified included — a situation exacerbated still further by the economic crisis of the late 2000s (Zhi et al. 2012). Women's insecurity on the labour market, mainly in the cities, is due not only to their growing difficulty in finding employment, but also to the widening gender wage gap. In 1990, the average income of female city-dwellers had reached 77.5% that of men, but 20 years later it had fallen to just two thirds of the average male income (67.3%). The relative deterioration in women's incomes has been even greater in the countryside, where women's wages relative to men's fell from 79% in 1990 to 56% in 2010. The ACWF-2000 survey shows that in the cities, almost half of working women (47.4%) earned less than 5,000 yuans a year on average (versus slightly more than a quarter of men: 28.4%) and just 6.1% earned more than 15,000 yuans a year on average (versus 12.7% of men). Moreover, alongside these income

**Table 6.3** Distribution of men and women by type of activity in 2005 and percentages of women in the various sectors, 1990 and 2005

| | Women | Men | Percentage of women | |
|---|---|---|---|---|
| | | | 1990 | 2005 |
| Government, party and NGO leaders | 0.7 | 2.2 | 11.2 | 21.6 |
| Technical staff | 8.2 | 7.0 | 45.1 | 49.4 |
| Offices | 2.6 | 4.6 | 26.0 | 31.8 |
| Trade, services | 13.0 | 11.3 | 46.8 | 48.9 |
| Agriculture, forestry, stock-rearing and fish farming | 62.6 | 52.6 | 47.9 | 49.7 |
| Manufacturing, transport | 12.7 | 22.0 | 35.8 | 32.5 |
| Other | 0.2 | 0.3 | 41.7 | 34.9 |
| Total | 100.0 | 100.0 | 45.0 | 45.4 |

Sources: PCO (1993); NBS (2007)

differences, women have a slightly longer working day: 9.6 h per day in 2010, compared to 9.0 h for men (ACWF 2010).

These gender inequalities with regard to levels of income and working hours are mainly due to the type of employment occupied, with most women working at unskilled, low-paid jobs in agriculture, the manufacturing industries, transport, shops or services (Tan 2002; Zhi et al. 2012) (Table 6.3). The feminization of the agricultural workforce partly explains these increasing differences in income: in 2000, 82.1 % of rural women were employed full-time in agricultural activities (compared to 64.7 % of men) (ACWF 2010).

## 6.3 Women in Private Life: Roles Still Firmly Gendered

Private life is a place where, doubtless to an even greater extent than in public life, the status of Chinese women has changed both for better and for worse. In many ways, particularly as regards their reproductive health (see Inset 6.1), fertility control and participation in household decision-making, their overall situation has unquestionably improved. The place of women in the family, firstly as girls and then as wives, remains nonetheless subject to various influences which do not always work to their advantage.

### Inset 6.1 Considerable Progress in Reproductive Health

Access to health care and its impact on the well-being and survival of individuals are markers of a society's level of development. Maternal mortality[11]

[11] The maternal mortality rate measures the number of mothers who die in pregnancy, or during or after childbirth, per 100,000 live births.

is a good indicator of the extent to which women receive health care and hence their place in public health policies. The implementation of the Millennium Development Goals (see p. 97) led to various national initiatives which have significantly reduced maternal mortality in recent years. In 2008, China recorded 38 maternal deaths per 100,000 births, a very privileged position compared to that of its main neighbours. In the same year, India, for example, recorded a rate of 230 per 100,000, Indonesia, 240 and Bangladesh, 340. However, China remains well below the level of its more developed neighbours such as South Korea (14 per 100,000) and Japan (6 per 100,000) (UNICEF 2008).

The significant decrease in the maternal mortality rate, which has fallen by more than 5% a year on average since the early 1990s (Table 6.4), is due mainly to the almost universal adoption of hospital births, which have risen from a little over 40% in the mid-1980s to more than 90% today (Feng et al. 2010).[12] It is also the result of better antenatal care, including in rural areas, where in 2010 almost nine in ten pregnancies (89.4%) received medical follow-up. However, although maternity no longer represents a significant risk for the survival of Chinese women, these overall achievements have not been matched throughout the country.

In rural areas, while maternal mortality fell by more than a third between 1991 and 2004, the rate remains more than double that of urban areas (Table 6.4). In 2006, it had fallen to below 10 per 100,000 in Shanghai, Beijing and Tianjin, i.e. to a level close to that of Asia's most developed countries, but remained eight times more frequent in the rural areas of Gansu (76), Guizhou (83), Qinghai (99), Xinjiang (107), and at a very high level in Tibet (246). These disparities are due partly to the fact that hospital births are still uncommon in some rural areas. In 2006, a third of all births took place at home for women in rural Gansu (33%), half of births in rural Guizhou (49%) and two-thirds in rural Tibet (64%) (MOH 2007). Moreover, data from ACWF-2010 indicate that, in the west and centre of the country, almost half of all rural women (43.4%) had not had a gynaecological examination in the three years preceding the survey (compared to 17.8% in the rural zones of Beijing, Tianjin and Shanghai and 39.1% in the rest of the eastern region) (Fig. 6.2).

**I.A.**

[12] Since the mid-2000s, the Chinese Ministry of Health has set up a benefits system for pregnant women in rural areas. The benefit of 500 yuans (around €50) is intended to meet the cost of a hospital birth. It is one of the measures introduced to combat infant and maternal mortality under the MDGs (see above). See: China lowers maternal death through subsidizing hospital delivery. 9 Sept 2011. Available at http://news.xinhuanet.com/english2010/china/2011-09/09/c_131129666.htm. Accessed 13 Sept 2012.

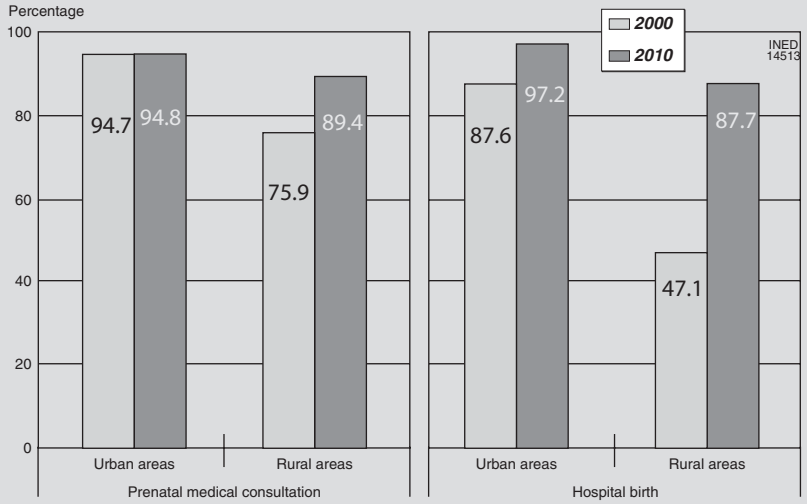



**Fig. 6.2** Indicators of medical attention for pregnant women under 35 at the birth of their last child, 2000 and 2010 (%) (Sources: ACWF 2000, 2010)

**I.A.**

**Table 6.4** Trends in main indicators of reproductive health by place of residence

| | China | Urban areas | Rural areas |
|---|---|---|---|
| *Maternal mortality (maternal deaths per 100,000 live births)* | | | |
| 1991 | 80 | 46.3 | 100.0 |
| 2004 | 48.3 | 26.1 | 63.0 |
| 2010 | 30.0 | n.d. | n.d. |
| *Hospital births (%)* | | | |
| 1985 | 43.7 | 73.6 | 36.4 |
| 2010 | 94.5[a] | 97.2[b] | 87.7[(2)] |
| *Births using "new delivery methods[c]"(%)* | | | |
| 1991 | 93.7 | 98.1 | 93.2 |
| 2006 | 97.8 | 98.7 | 97.2 |

[a] In 2008, for all women
[b] In 2010, for women under 35 years old
[c] These methods are based on two main principles: attendance by qualified nurses and midwives and the use of sterile instruments to reduce the incidence of tetanus and other diseases. Their promotion was followed, from 1978 onwards, by the addition of new requirements to the childbirth protocol (Tan 2002). These figures apply to all births, whether at home or in hospital
Sources: MOH (2007); ACWF 2000, 2010

On the whole, Chinese women express a high level of satisfaction with their status in the household (in 2010, 85.2% reported being satisfied or very satisfied in this respect) and with the different roles of men and women. However, some of these women (and in total, a quarter of those questioned in the same survey:

**Table 6.5** Time devoted each day to domestic tasks by persons in employment, by sex (in hours)

| | Women | | Men | | Female percentage of total time devoted to housework | |
|---|---|---|---|---|---|---|
| | 2000 | 2010 | 2000 | 2010 | 2000 | 2010 |
| Urban areas | 2.9 | 1.7 | 1.2 | 0.7 | 70.2 | 70.3 |
| Rural areas | 4.4 | 2.4 | 1.6 | 0.8 | 73.9 | 74.1 |

Source: ACWF (2010)

24.7%) reported experience of domestic violence, i.e. verbal and/or physical violence, restriction of personal liberty, economic control and/or forced sexual relations (ACWF 2010). Other indicators made available by the ACWF surveys also show that the spouses' roles remain deeply gendered and that women clearly remain under the control of their husbands in many respects. In particular, they are not systematically involved in domestic decisions, although the situation has certainly improved in recent years. In 2010, three married women in four took part in important household decisions about bank loans or financial investments (74.7 versus 50.5% in 1990) and an equivalent percentage had a say in the decision to buy or build a family home (74.4 versus 65.6% in 1990). Nevertheless, only one women in seven (13.2% in 2010) was a home-owner in her own right (four times fewer than men: 51.7%) and one in four (28.0%) in co-ownership with her husband (compared to 25.6% of men). Equality between single men and women is also far from being achieved: one unmarried man in five (21.8%) owns his own home, compared with one unmarried woman in fifteen (6.9%). This state of affairs is related to the abovementioned gender wage gap, which clearly results in unequal access to financial resources and property, together with the social pressure to buy a home, which is less acute for women than for men (Attané 2011; Osburg 2008). It also illustrates the persistence of strong patriarchal traditions, which although they invariably favour the male line, continue to influence family habits, particularly as regards inheritance. For example, although enshrined in Chinese law, women's right to inherit in the same way as men is still not widely respected (Bossen 2007) and is not even universally accepted. The ACWF-2000 survey indicates that only around one person in four (23.6% of women and 28.1% of men, compared to 16.2 and 21.5%, respectively, 10 years earlier) considers that married brothers and sisters have an equal right to inherit. Moreover, an equally small proportion are favourable to a child taking his or her mother's surname: 34.2% of women in 2000 (twice the 1990 figure of 17.1% all the same) and 21.2% of men (an increase of 7.0 points).

These different results confirm the deep-seated internalization of gendered roles in Chinese households and their tacit acceptance by the majority of women and men. For example, the division of domestic work remains very unequal, even in households where both husband and wife work. In 2010, the average time spent on domestic tasks by working women each day was 2.5 to 3 times longer than the time spent by men (Table 6.5). However, the majority of married men and women do not really challenge this division of tasks (Zuo and Bian 2001). Overall, the role of the husband as the breadwinner and that of the wife as centred on the home and domestic tasks remains firmly anchored not only in marital practices but also in the spouses' expectations of each other (Evans 2008). These differentiated expectations may

therefore explain the unequal access of men and women to educational, financial and inherited resources, thus perpetuating gender differences. They could also help understand why, on a labour market that has become highly competitive, the work of Chinese women serves, as elsewhere (Battagliola 2004), as an adjustment variable. When jobs are scarce, family arbitration usually favours the man's job and sacrifices that of the woman, whose contribution to the family income is generally secondary (Zhi et al. 2012). Women therefore find themselves in competition with men for jobs twice over, once on the labour market and again within the home.

The anchoring of gendered roles in Chinese households is also due to the persistently high value placed on maternity, despite the dramatic drop in fertility over the last few decades. Yet low fertility is supposedly favourable to the emancipation of women (Oppenheim Mason 2000), for two main reasons, firstly because it mechanically reduces the risks linked to pregnancy and therefore improves their health and reduces maternal mortality, and secondly, because it gives them more opportunity to engage in activities outside the domestic sphere. Free from the constraints of looking after a large family, women are theoretically more available to take up paid employment, which in turn gives them greater economic and domestic autonomy. After four decades of birth control, China has distinguished itself in this respect. Fertility there has now attained a comparable, or even lower, level than that of the most developed countries (around 1.4–1.5 children on average in China in 2010),[13] compared wih 2.3 in 1990 and almost six in 1970. However, reduced fertility has not been accompanied by an increase in the number of working women, quite the contrary. As female labour force participation was already exceptionally high in the 1970s, potential for growth is limited and the negative correlation effect usually observed between these two phenomena cannot operate. Moreover, the effects of the fertility decline on women's employment have been largely counterbalanced by the liberalization of the labour market and state disengagement from childcare provision, with a steep rise in the cost of bringing up children, notably in matters of day care, health and education, making the reconciliation of family and working life increasingly difficult and costly. Paradoxically, even though most Chinese families are now very small, children constitute an increasing obstacle to employment for Chinese women (Attané 2011). Moreover, the family planning programme continues to impose major restrictions on women (notably that of compulsory contraception and the negation of personal fertility desires), thereby limiting their empowerment at individual and family levels.

## Conclusion

Chinese women do not, as famously formulated by Mao, hold up "half the sky". Their rights and interests are nevertheless increasingly protected by law, and the fight for gender equality regularly brings new victories. However, the recent social changes are extremely complex. The highly gendered roles that still exist within

[13] Zhongguo xianru chao di shengyulü xianjing (China falls into the trap of the lowest-low fertility). Nanfang zhoumou, 24 May 2011. Available at www.infzm.com/content/59364. Accessed 25 Sept 2012.

the couple in China are part of a continuum of inequality between the sexes that continues throughout life. From this point of view, demographic trends, which are closely dependent on the prevailing family and social norms, shed special light on the situation of Chinese women. While Chinese girls are studying longer at school — almost as long as boys among the younger generations — the persistence of deeply entrenched gendered roles in the workplace and family life continues to limit their autonomy and contributes to the social reproduction of gender inequality. This is particularly obvious in the early stages of life, as sons are still preferred over daughters in many families, as demonstrated by Li, Jiang and Feldman's chapter in this book.

The disengagement of the state in key areas such as employment, social security, education, and health leaves families to fend for themselves and exacerbates socioeconomic inequalities. The population, more vulnerable as a whole, is obliged to develop new strategies for meeting its own needs and getting the best out of the transformations that are taking place. At the same time, while Chinese legislation remains among the most advanced in the developing world with regard to promoting gender equality, and while there are many initiatives in favour of women, society only gives them relative autonomy, limited in particular by their lesser access to resources (notably educational, financial, and inherited assets) in comparison to men.

In many respects, Chinese women do not have the same opportunities for social achievement as men and remain largely invested in roles that have a lesser social value than those of men. The roles and spheres of influence attributed to men and women thus remain clearly differentiated. But China is not really a textbook case. Indeed, at the beginning of the twenty-first century, the question of women and equality between the sexes remains a priority on the international political agenda, and with good reason. Rare are the countries (does one even exist?) that offer conditions of perfect equality between women and men in areas as varied as access to health care, education, and employment, wages, political representation, representation of assets or, in private life, family decision-making and the division of domestic tasks.

## References

ACWF (All China Women Federation). (2000). Di er qi Zhongguo funü shehui diwei chouyang diaocha zhuyao shuju baogao (Executive report of the second sample survey on Chinese women's social status). http://www.stats.gov.cn/tjgb/qttjgb/qgqttjgb/t20020331_15816.htm. Accessed 25 Sept 2012.

ACWF (All China Women Federation). (2008). *Annual report on gender equality and women's development in China*. Beijing: Social Sciences Academic Press.

ACWF (All China Women Federation). (2010). Di san qi Zhongguo funü shehui diwei diaocha zhuyao shuju baogao (Executive Report of the third sample survey on Chinese women's social status), Funü yanjiu lun cong, 6(108).

ACWF (All China Women Federation). (2012). Laws and regulations. http://www.women.org.cn/english/english/laws/mulu.htm. Accessed 9 Nov 2013.

Adams, J., & Hannum, E. C. (2008). Girls in Gansu, China: Expectations and aspirations for secondary schooling. http://repository.upenn.edu/gansu_papers/4. Retrieved 25 Sept 2012.

Angeloff, T. (2010). La Chine au travail (1980–2009): Emploi, genre and migrations. *Travail, genre and sociétés*, *1*(23), 79–102.

Attané, I. (2005). *Une Chine sans femmes*? Paris: Perrin.

Attané, I. (2011). *Au pays des enfants rares. La Chine vers une catastrophe démographique*. Paris: Fayard.

Attané, I. (2012). Being a woman in China today: A demography of gender. *China Perspectives, 4,* 5–15.

Battagliola, F. (2004). *Histoire du travail des femmes*. Paris: La Découverte.

Bongaarts, J. (2003). Completing the fertility transition in the developing world: The role of educational differences and fertility preferences. Policy research division working papers, 177. New York: Population Council. http://www.popcouncil.org/pdfs/wp/177.pdf. Retrieved 25 Sept 2013.

Bossen, L. (2007). Missing girls, land and population controls in rural China. In I. Attané & C. Z. Guilmoto (Eds.), *Watering the neighbour's garden: The growing demographic female deficit in Asia* (pp. 207–228). Paris: Cicred.

Burnett, J. (2010). Women's employment rights in China: Creating harmony for women in the workplace. *Indiana Journal of Global Legal Studies, 17*(2). http://www.repository.law.indiana.edu/ijgls/vol17/iss2/8. Retrieved 25 Sept 2012.

CERN (China education and research network). (2011). Nü daxuesheng jiuye kunjing diaocha: Liu cheng ceng zaoyu xingbie xianzhi (Survey on the employment of male college students: 60% have experienced gender-related limitations). http://edu.sina.com.cn/j/2011-07-27/1357205033.shtml. Retrieved 25 Sept 2012.

CILC. (2011). Charting international labor comparison, 2011 edition. Bureau of Labor Statistics. United States Department of Labor. http://www.bls.gov/fls/chartbook/section2.pdf. Retrieved 25 Sept 2012.

Deng, S. L., Xu, W., & Alon, I. (2011). Framework for female entrepreneurship in China. *International Journal of Business and Emerging Markets, 3*(1), 3–20.

Elisseeff, D. (1988). *La femme au temps des Empereurs de Chine*. Paris: Stock.

Evans, H. (2008). *The subject of gender: Daughters and mothers in urban China*. Lanham: Rowman & Littlefield Publishers.

Faure, G. O., & Fang, T. (2008). Changing Chinese values: Keeping up with paradoxes. *International Business Review*, *17*(2), 194–207.

Feng, X. L., Zhu, J., Zhang, L., Song, L., Hipgrave, D., Guo, S., Ronsmans, C., Guo, Y., & Yang, Q. (2010). Socio-economic disparities in maternal mortality in China between 1996 and 2006. *BJOG*, 117(12), 1527–1536.

Johnson, K. A. (1983). *Women, the Family and Peasant Revolution in China*. Chicago: University of Chicago Press.

Liu, J. Y. (2007). *Gender and work in urban China, women workers of the unlucky generation*. London: Routledge.

MOH (Ministry of Health). (2007). *Zhongguo jiankang nianjian (China Health Yearbook)*. Beijing: Zhonghua renmin gonghe guo weisheng bubian, zhongguo xie he yike daxue chubanshe.

NBS. (2007). *National Bureau of Statistics, 2005 nian quanguo 1% renkou chouyang diaocha zhuyao shuju (Data of the 2005 1% Sample Survey)*. Beijing: Zhongguo tongji chubanshe.

Oppenheim Mason, K. (2000). Influence du statut familial sur l'autonomie and le pouvoir des femmes mariées dans cinq pays asiatiques. In M. E. Cosio-Zavala & E. Vilquin (Eds.), *Statut des femmes and dynamiques familiales* (pp. 357–376). Paris: Cicred.

Osburg, J. L. (2008). *Engendering wealth: China's new rich and the rise of an elite masculinity*. Chicago: The University of Chicago.

PCO (Population Census Office and National Bureau of Statistics of China). (1993). *Zhongguo 1990 nian renkou pucha ziliao (Tabulation on the 1990 population census of the People's Republic of China)*. Beijing: Zhongguo renkou chubanshe.

PCO (Population Census Office and National Bureau of Statistics of China). (2002). *Zhongguo 2000 nian renkou pucha ziliao (Tabulation on the 2000 population census of the People's Republic of China)*. Beijing: Statistics Press.

PCO (Population Census Office and National Bureau of Statistics of China). (2012). *Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 population census of the People's Republic of China)*. Beijing: Statistics Press.

Rocca, J.-L. (2010). *Une sociologie de la Chine*. Paris: La Découverte.

Silverstein, M., Zhen, C., & Li, S. (2006). Intergenerational transfers and living arrangements of older people in rural China: Consequences for psychological well-being. *Journal of Gerontology, 61*(5), 256–266.

Song, J. (2011). China's female entrepreneurs dare to try. *China Daily,* 15 Dec 2011.

Summerfield, G. (1994). Economic reform and the employment of Chinese women. *Journal of Economic Issues, XXVIII*(3), 715–732.

Tan, L. (2002). Quel statut pour la femme chinoise?. In I. Attané (Ed.), *La Chine au seuil du xxi^e^ siècle: questions de population, questions de société* (pp. 329–348). Paris: INED.

Tan, L. (2006). *Zhongguo xingbie pingdeng yu funü fazhan pinggu baogao 1995–2005 (Report on gender equality and women's development in China 1995–2005)*. Beijing: Social Sciences Academic Press.

UNICEF. (2008). Information by country and programme. http://www.unicef.org/infobycountry. Accessed 25 Sept 2012.

Wang, Z. (2010). Gender, employment, and women's resistance. In E. J. Perry & M. Selden (Eds.), *Chinese society: Change, conflict and resistance* (pp. 162–186). London: Routledge.

Wei, G. (2011). Gender comparison of employment and career development in China. *Asian Women, 27*(1), 95–113.

Whyte, M. K. (2004). Filial obligations in Chinese families: Paradoxes of modernization. In C. Ikels (Ed.), *Filial piety: Practice and discourse in contemporary East Asia*. Stanford: Stanford University Press.

Whyte, M. K. (2005). Continuity and change in urban Chinese family life. *The China Journal, 53,* 9–33.

Yan, Y. (2006). Girl power: Young women and the waning of patriarchy in rural North China. *Ethnology, 45*(2), 105–123.

Zhi, H., Huang, J., Huang, Z., Rozelle, S., & Mason, A. (2012). Impact of the global financial crisis in rural China: Gender, off-farm employment, and wages. Center for Chinese Agricultural Policy. http://en.ccap.org.cn/show.php?contentid=3719. Accessed 25 Sept 2012.

Zuo, J., & Bian, Y. (2001). Gendered resources, division of housework, and perceived fairness—case in urban China. *Journal of Marriage and Family, 63*(4), 1122–1133.

# Part II
# Modernization, Social Change and Social Segregation

# Chapter 7
# Are China's Minority Nationalities Still on the Margins?

**Dudley L. Poston and Qian Xiong**

## 7.1 Introduction

In 2010, the population of China totalled 1.33 billion people, of which an overwhelming 1.22 billion (91.6% of the total) were members of the Han nationality. The remaining 112 million (almost 8.4%) were members of one of China's 55 minority nationalities (*shaoshu minzu*). In this chapter we examine the demographic and socioeconomic structure of China's minority populations, focusing in particular on those 18 groups with populations of over 1 million.

This chapter begins with a brief review of the history of relations between the Han and the non-Han minorities. It next presents vignettes for the largest 18 groups and analyses their socioeconomic and demographic characteristics, and the differences between them and the Han population. The chapter is concluded by spelling out some of the implications of our research for assimilationist theories of ethnic group relations.

## 7.2 Han-Minority Relations

The minority populations of China are not distributed randomly across the country. Although there are minorities in almost every one of China's provinces and counties, most tend to reside in the border areas and are comparatively scarce in the interior regions of the country. Indeed five of China's major administrative subdivisions are not provinces but "autonomous regions" set aside for specific minority groups, although other population groups also reside there. These are the Xinjiang Uygur Autonomous Region, the Inner Mongolia (Nei Menggu) Autonomous Region, the Tibet (Xizang) Autonomous Region, the Ningxia Hui Autonomous Region, and the Guangxi Zhuang Autonomous Region (Attané and Courbage 2000). As we show

D. L. Poston (✉) · Q. Xiong
Texas A&M University, USA
e-mail: d-poston@tamu.edu

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_7, 

later in this chapter, most of the minority groups are therefore highly segregated residentially from the Han. What can be said about this distribution of the minorities and the Han? What are its origins and implications? To answer these questions, we refer to two Chinas, one inner and one outer.

**Inset 7.1 Balancing Regional Development and Strengthening Border Regions**

Reflecting the varying hospitality of the soil, the terrain, and the climate, China's population in 1949 was unevenly distributed, and almost three-quarters of inhabitants lived on less than one-third of the territory. Concentrated in the eastern part of the country, the population lived far from the national reserves of natural resources and raw materials needed by industry, as most modern plants were located in the coastal regions. To redress these imbalances, China's new communist government acted promptly to redistribute its population. Another goal was to foster the development of remote rural areas by sending managers and skilled labour there.

The Communist government made industrial development the top priority of its first Five-Year Plan (1953–1957). As part of a planned process, migration would serve to balance labour requirements among regions. The government therefore implemented an inter-regional migration policy. The stated goal was to deconcentrate industry by promoting its expansion in the hinterland and to place new land under cultivation. But there was another purpose as well: to stem the growth of towns and cities, where rural-urban migration, then in full swing, was creating ever greater problems, i.e. housing and food shortages coupled with substantial underemployment. The measures adopted accordingly sought to keep the rural population in place (thanks to the *hukou* system, see Inset 4.1, p. 66) and reduce the urban population.

The policy of planned migrations thus served two purposes: the first was economic, the second demographic, namely, to correct unbalanced population distribution. The central government supported the development of remote regions, with a special emphasis on border areas. Massive projects were launched to build new infrastructure and clear arable land. Between 1950 and 1958, China built 94,000 km of roads and 5,400 km of railroads. In the same period, the surface area under cultivation grew by 11 %, with the largest expansions in Xinjiang, Inner Mongolia, and the north-eastern regions (Meissner 1990). The policy therefore also had an ethnic objective, albeit not always clearly stated: these peripheral areas, sparsely inhabited but rich in natural resources, were also those in which ethnic minorities were concentrated. Because of their crucial strategic importance, the main targets were the north and the west, i.e. Inner Mongolia, bordering on the People's Republic of Mongolia and sharing a short frontier with the USSR; Xinjiang, two-thirds of whose borders touch the Soviet Union and Pakistan; and Tibet, neighbour

of China's timeless rival, India. Strengthening the Han presence in these areas was also a way to reinforce central authority, guarantee stability on its frontiers, and promote economic development.

China very quickly turned Xinjiang into one of its main pioneer lands (Larivière and Sigwalt 1996). Xinjiang (literally "new frontier") was not incorporated into China's sphere until 1759, date of its conquest by the Manchu dynasty of the Qing. In the two centuries that followed, its ties to the central government remained very loose. Since 1949, the year marking the conquest of power by the Communist Party and the inauguration of effective nationwide control, Xinjiang has been ever more firmly anchored to China. Xinjiang is an object of both desire and fear. It is desired for the wealth of its subsoil and its strategic position, but loathed for its indigenous population: the rebellious, untamed Uygurs. As Turkophone Muslims, Uygurs possess the rich cultural traditions of Central Asian Muslims, and have nothing in common with the Han. Uygurs also have a strong sense of identity, largely tied to their geographic concentration on a territory of their own, where they form a majority. Hence the rise of ethnic grievances, not to say separatist claims, driven by rejection of Chinese supremacy (Attané 2006).

In the 1950s, for economic and strategic purposes, the Communists promoted population transfers. The radio and press appealed to the socialist consciousness, patriotism, and spirit of adventure by encouraging young Han people to migrate, particularly to Xinjiang (Tien 1973), where the construction of irrigation systems and establishment of state-owned farms created a major need for migrant labour. Since 1949, the border regions have therefore been massively settled. The number of Han in Inner Mongolia doubled between 1953 and 1964 from 5.1 million to 10.7 million. In Xinjiang, it rose sevenfold from 330,000 to 2.3 million in the same period (an annual average growth rate of 18 %) and doubled between 1964 and 1982 (Attané 2006).

After 20 years of economic liberalization, with the eastern coast being recognized as the main beneficiary of the reforms, the government launched an ambitious programme to "develop the West" in 2000. Poverty in the remote regions is to be reduced by encouraging local investment in capital and technological advances. The programme priorities are infrastructure, environment, and training. Large-scale projects are under way in transportation and communications, such as airports, rail links, highways, and telephone networks. Behind this strategy also lies a calculation with regard to Buddhism and Islam, which the China's government does not deny: "When the economy develops, the attention of the people will gradually shift from religion to the joys and pleasures of this world." (*Far Eastern Economic Review*, 21 Aug. 2001). In 2010, 19.7 million Han were settled in Inner Mongolia, where they make up 80 % of the province's population. 8.8 million Han live in Xinjiang, accounting for 40 % of the inhabitants of the region.

**I.A.**

**References**

Attané, I. (2006). Fifty years of Demographic Policies in China: An Assessment. In Caselli G., Vallin J., & Wunsch G. (Eds), *Demography: Analysis and Synthesis* (pp. 301–319), London: Academic Press, Vol. 4.

Larivière, J. –P., & Sigwalt P. (1996). *La Chine.* Paris: Masson and Armand Colin.

Meissner, W. (1990) La voie orthodoxe (1949–1955). In M.-C. Bergère, L. Bianco, & J. Domes (Eds.)*, La Chine au XX*e *siècle de 1949 à aujourd'hui* (pp. 9–33)*,* vol. 2. Paris: Arthème Fayard.

Tien, H. Y. (1973). *China Population Struggle.* Columbus: Ohio State University Press.

### *7.2.1 Ethnic Minorities Concentrated in "Outer China"*

China's Great Wall runs roughly from Beijing in the east to Gansu in the northwest. If one were to draw a perpendicular line from the western extremity of the Great Wall in the upper part of Gansu Province to the southern boundaries of Sichuan, Yunnan, and Tibet in south-western China, "Inner China" would lie to the south of the Great Wall and to the east of the drawn line. About 95% of China's population live in this inner half, and most are Han. Around 5% of China's population live in the other half of the country, known as "Outer China", and most are minorities (Sinclair 1989, p. 10). But even this generalization is a bit misleading because many areas in Inner China are inhabited by large numbers of minority peoples, viz., in the south-western provinces of Guangxi, Guizhou, and Yunnan (Poston et al. 2006)

Chinese history provides context for our discussion. In 1500 B.C., there was no China as we know the country today, and as such no Chinese people. The area now known as China was then "inhabited by a great number of tribes with different cultures" (Eberhard 1982, p. 8). During the Qin dynasty (221–207 B.C.), Qin Shi Huangdi was the first emperor of a united country, and it was during this time that construction of the Great Wall began to keep the minorities to the north outside the newly formed country (Gernet 1996). However, the "vast wall system visible today was mainly built by the Chinese Ming dynasty in the sixteenth century" (Fairbank 1992, p. 57; Fairbank and Goldman 2006).

To the south of the new wall, the agricultural peoples formed a united state with the Han people in control. Gradually they became stronger and more advanced than any of the other groups, and eventually became the majority. "In the long course of Chinese history, many groups have disappeared through being fused with or assimilated into the Han or other nationalities, either due to a natural process or through conquest and forced assimilation" (Mackerras 1994, pp. 21–22). The Han Chinese people as we know them today, therefore, are the product of the intermixing of various population groups originally settled in the area south of what is today the Great Wall.

The Han originally were agriculturalists and "were even in those early times contemptuous of the peoples around them, the hunters and gatherers or nomads" (Heberer 1989, p. 18). The non-Han peoples were different from the Han mainly regarding their sustenance activities and social and cultural organization, and over the centuries were pushed more and more into the borderlands. This explains why large numbers of minorities today reside in the far southern provinces of Sichuan, Yunnan, Guizhou, and Guangxi (Poston et al. 2006). Over the centuries up to the present, the Han have considered their culture and civilization as superior and as the centre of the world (see also Harrell 1995). In fact, the Chinese name for China: "Zhongguo", literally means the "Middle kingdom".

### *7.2.2 The Muslim Chinese*

China has the fifteenth largest Muslim population of any country in the world. There are more Muslims in China than in every other Middle Eastern Muslim nation, except Turkey, Iran and Egypt; and there are about the same number of Muslims in China as in Iraq (Poston et al. 2011)

Ten of China's minority nationalities are predominantly Muslim. The two numerically largest Muslim nationality groups in China are the Hui (with a 2010 population of 10.6 million in 2010) and the Uygur (10.07 million), and they comprise almost 90 % of China's Muslims. The other eight are the Kazakh (1.46 million in 2010), the Dongxiang (621,500), the Kyrgyz (186,708), the Salar (130,607), the Tajik (51,069), the Bonan (20,074), the Uzbek (10,569), and the Tatar (3,556) (Table 7.1). These ten Muslim minority nationalities reported a total population in 2010 of over 23 million, comprising almost 21 % of China's minority peoples. Most of China's Muslims reside in the northwest, mainly in Xinjiang. The Muslims of China defy demographic and sociological generalization. Other than the fact that most are Sunni (only the Tajik are Shi'ites), on most other demographic and socioeconomic dimensions, they are far more different from one another than similar (Poston et al. 2011).

Even within the Hui and Uygur, there are vast differences. The Hui are frequently differentiated from the other Muslim groups in China by virtue of the fact that they are Chinese people who practice Islam. Conversely, the Uygur and most other Chinese Muslims are of Turkic ancestry and are not considered to be Chinese. Also, although some Hui speak other languages in addition to Mandarin Chinese, they are primarily Sinophone. It is not a surprise therefore that, as discussed later, the Hui peoples are closer to the Han spatially and socially than to any of the other Muslim groups. They have assimilated the Han culture more so than any of the other minorities. They wear Han-style clothing and indeed are often referred to as "Chinese-speaking Muslims" to distinguish them from Uygurs, Kazakhs and the other Muslim groups who are not Chinese by virtue of their distinctive ancestors, cultures and languages.

Among the Uygur nationality, there are several separatist groups working for the removal from China of the Xinjiang region in the far north-west (Poston et al. 2011). In the early 1990s "the Taliban regime in Kabul trained a number of militant

**Table 7.1** Population size and main provincial locations of China's minority nationalities, 2010 and 2000

| Minority nationality | Population size | | Total change (in %) | Main provincial location(s) |
|---|---|---|---|---|
| | 2010 | 2000 | 2000–2010 | 2010 |
| Zhuang | 16,926,381 | 16,178,811 | 4.62 | Guangxi, Yunnan, Guangdong, Zhejiang, Guizhou |
| Hui | 10,586,087 | 9,816,805 | 7.84 | Ningxia, and nine other areas |
| Manchu | 10,387,958 | 10,682,262 | −2.76 | Liaoning, Heilongjiang, Jilin |
| Uygur | 10,069,346 | 8,399,393 | 19.88 | Xinjiang |
| Miao | 9,426,007 | 8,940,116 | 5.43 | Guizhou, Hunan, Yunnan, and three other areas |
| Yi | 8,714,393 | 7,762,272 | 12.27 | Yunnan, Sichuan, Guizhou, Zhejiang, Guangdong |
| Tujia | 8,353,912 | 8,028,133 | 4.06 | Hunan, Hubei |
| Tibetan | 6,282,187 | 5,416,021 | 15.99 | Tibet, Sichuan, Qinghai, Gansu, Yunnan |
| Mongols | 5,981,840 | 5,813,947 | 2.89 | Inner Mongolia, and six other areas |
| Dong | 2,879,974 | 2,960,293 | −2.71 | Guizhou, Hunan, Guangxi |
| Buyei | 2,870,034 | 2,971,460 | −3.41 | Guizhou |
| Yao | 2,796,003 | 2,637,421 | 6.01 | Guangxi, Hunan, Yunnan, Guangdong, Guizhou |
| Bai | 1,933,510 | 1,858,063 | 4.06 | Yunnan |
| Korean | 1,830,929 | 1,923,842 | −4.83 | Jinlin, Heilongjiang, Liaoning, Shandong |
| Hani | 1,660,932 | 1,439,673 | 15.37 | Yunnan |
| Li | 1,463,064 | 1,247,814 | 17.25 | Hainan |
| Kazakh | 1,462,588 | 1,250,458 | 16.96 | Xinjiang |
| Tai | 1,261,311 | 1,158,989 | 8.83 | Yunnan |
| She | 708,651 | 709,592 | −0.13 | Fujian, Zhejiang |
| Lisu | 702,839 | 634,912 | 10.70 | Yunnan |
| Dongxiang | 621,500 | 513,805 | 20.96 | Gansu, Xinjiang |
| Gelo | 550,746 | 579,357 | −4.94 | Guizhou |
| Lahu | 485,966 | 453,705 | 7.11 | Yunnan |
| Wa | 429,709 | 396,610 | 8.35 | Yunnan |
| Shui | 411,847 | 406,902 | 1.22 | Guizhou |
| Naxi | 326,295 | 308,839 | 5.65 | Yunnan |
| Qiang | 309,576 | 306,072 | 1.14 | Sichuan |
| Tu | 289,565 | 241,198 | 20.05 | Qinghai, Gansu |
| Mulam | 216,257 | 207,352 | 4.29 | Guangxi |
| Xibe | 190,481 | 188,824 | 0.88 | Liaoning, Xinjiang |
| Kirgiz | 186,708 | 160,823 | 16.10 | Xinjiang |
| Jingpo | 147,828 | 132,143 | 11.87 | Yunnan |
| Daur | 131,992 | 132,394 | −0.30 | Inner Mongolia, Heilongjiang |
| Salar | 130,607 | 104,503 | 24.98 | Qinghai, Gansu |
| Blang | 119,639 | 91,882 | 30.21 | Yunnan |
| Maonan | 101,192 | 107,166 | −5.57 | Guangxi |
| Tajik | 51,069 | 41,028 | 24.47 | Xinjiang |
| Pumi | 42,861 | 33,600 | 27.56 | Yunnan |
| Achang | 39,555 | 33,936 | 16.56 | Yunnan |

**Table 7.1** (continued)

| Minority nationality | Population size | | Total change (in %) | Main provincial location(s) |
|---|---|---|---|---|
| | 2010 | 2000 | 2000–2010 | 2010 |
| Nu | 37,523 | 28,759 | 30.47 | Yunnan |
| Ewenki | 30,875 | 30,505 | 1.21 | Inner Mongolia, Heilongjiang |
| Jing | 28,199 | 22,517 | 25.23 | Guangxi |
| Jino | 23,143 | 20,899 | 10.74 | Yunnan |
| Deang | 20,556 | 17,935 | 14.61 | Yunnan |
| Bonan | 20,074 | 16,505 | 21.62 | Gansu |
| Russian | 15,393 | 15,609 | −1.38 | Xinjiang |
| Yugur | 14,378 | 13,719 | 4.80 | Gansu |
| Ozbek | 10,569 | 12,370 | −14.56 | Xinjiang |
| Menba | 10,561 | 8,923 | 18.36 | Tibet |
| Oroqen | 8,659 | 8,196 | 5.65 | Inner Mongolia, Heilongjiang |
| Drung | 6,930 | 7,426 | −6.68 | Yunnan |
| Hezhen | 5,354 | 4,640 | 15.39 | Heilongjiang |
| Gaoshan | 4,009 | 4,461 | −10.13 | Taiwan, Fujian |
| Lhoba | 3,682 | 2,965 | 24.18 | Tibet |
| Tatar | 3,556 | 4,890 | −27.28 | Xinjiang |
| Undistinguished and Naturalized | 641,549 | 735,379 | −12.76 | Guizhou |
| Han | 1,220,844,520 | 1,137,386,112 | 7.34 | In majority in all provinces, excepting Tibet and Xinjiang |
| China | 1,332,810,869 | 1,242,612,226 | 7.26 | |

Sources: Based on PCO (2002) and PCO (2012)

Muslims [Uygurs] from Xinjiang, whose aim was to eject China from Xinjiang and to restore the independent state of East Turkistan" (Terrill 2003, p. 234).

## 7.3 A Slowing of Population Growth Among Minority Nationalities

In China, the minority populations are not thought of as races and, with a few exceptions, are not distinguishable on the basis of physical and anthropometric criteria. Their identification depends mainly on cultural and linguistic differences that over time have been relatively persistent (Dreyer 1993; Gladney 1994; Eberhard 1982; Fei 1981; Poston 1993; Poston and Shu 1987; Poston et al. 2006). However, most of China's minority peoples, particularly the 18 we focus on in this chapter, meet the three principal criteria deemed by social scientists as essential for being recognized as minorities, viz. (1) that each group comprises a small proportion of the country's population; (2) that each group exhibits a self-awareness that its members share a common culture or subculture; and (3) that each group has experienced discrimination from the majority (Bean and Tienda 1987, p. 210). The minority groups of China also have a fourth characteristic, namely that the Chinese government

recognizes them as specific nationalities, i.e. as *shaoshu minzu*, and hence distributes specific benefits to them (Harrell 1990). The 18 minority groups examined here have well-established and clear-cut *shaoshu minzu* status (Gladney 1994; Khan 1995, p. 125; Borchigud 1995). According to data from China's 2010 Census, the minority nationalities constituted almost 8.4% of the total population. Their share has therefore levelled off since 2000, after a slight increase as compared to the 4th census in 1990 (8.0%) and the 3rd census in 1982 (6.7%). Some of the earlier increases in their size, especially between 1982 and 1990, were not solely due to increases in their numbers, but, rather, to the reaffirmation of ethnic identity between 1982 and 1990 (Attané and Courbage 2000). That is, many minority persons who had classified themselves in the 1982 census as Han classified themselves in the 1990 census as minority; this was especially the case for the Manchu (Poston 1993).

These percentages are still relatively small compared to the overwhelmingly large percentage of Han. However, they represent over 112 million people. By comparison, in 2010 the minority populations of the United States comprised 36.3% of the country's population, numbering just under 112 million people (Humes et al. 2011). Thus there are about as many minorities in China as there are in the United States, even though China's share is one-fifth that of the United States. If the minorities of China were a single country, it would be the twelfth most populous in the world, outnumbered only by India, the United States, Indonesia, Brazil, Pakistan, Nigeria, Bangladesh, Russia, Japan, Mexico, and the Han population of China.

Table 7.1 presents the population size in 2010 and in 2000 of each of China's minority groups. The largest group is the Zhuang, with a population of nearly 17 million, and the smallest is the Tatar with just over 3,500 people. Most of the groups increased in size between 2000 and 2010, especially the larger ones.

Table 7.1 also shows the main locations of each of the groups. With a few exceptions, for example the Hui who are distributed throughout most of China, most minority groups are concentrated in border or mountainous provinces. Eighteen of them numbered over 1 million people in 2010.

**Inset 7.2 Contrasting Population Growth Rates Between the Ethnic Groups**

Between the first two censuses (in the 1953–1964 period), overall population growth of all ethnic minority groups was lower than that of the Han (1.2 and 1.7% annually, respectively). But opposite trends were observed between the ethnic groups considered separately. This period was characterized by political oppression of minorities, and saw incidences of population decline (at least statistically) among the Tibetans (−0.9%), who were slain in their thousands in the war with China, and who fled in their hundreds to India in 1959 following the exile of the Dalai Lama (Olson 1998). But the lower minority population growth of this period was also, in some cases, a matter of political opportunism, as avowed membership of the majority ethnic group was a strategy for avoiding various forms of repression and discrimination (Attané

et Courbage 2000). Conversely, the Zhuang, Hui and Mongol populations rapidly increased during that time, with annual growth rates exceeding 2% on the average.

Since 1964, by contrast, the annual average rate of increase of all ethnic minorities has exceeded that of the Han (+4.0 and +2.8%, respectively, between the 1964 and 1982 censuses, and +3.8% compared to +1.3%, respectively, between 1982 and 1990). This differential growth is partly due to the later onset of demographic transition among the minorities, to whom the birth control policy was not applied until the late 1980s, and partly due to the rise in self-reported ethnic affiliations (Attané 2007).

In the most recent period, some convergence in demographic behaviours has been observed. The population growth of ethnic minorities as a whole has slowed considerably: from +3.8% annually in 1982–1990 (against +1.3% for the Han) to +1.4% in 1990–2000 (+0.9% for the Han), to the point that between 2000 and 2010, their demographic growth was slightly lower than that of the Han: +0.6 and +0.7% respectively. The Koreans and the Manchu even experienced negative growth, due mainly to their very low fertility. By contrast, the Yi, the Hani, the Tibetans and the Kazakh, in particular, still had significant annual growth of between +1.1 and +1.6% on average. The Uygur had the highest rate: +1.8% in the latest intercensal period.

**I.A.**

**References**

Attané, I., & Courbage, Y. (2000). Transitional stages and identity boundaries: the case of ethnic minorities in China. *Population and Environment*, *1*, 257–280.

Attané, I. (2007). Minorities: Cultural Integration, Family Planning and Population Changes. In Zhao Z., & Guo F. (Eds.), *Transition and Challenge: China's Population at the Beginning of the 21st Century* (pp 251–270), Oxford University Press.

Olson, J. S. (1998), *An Ethnohistorical Dictionary of China*, London: Aldwych Press.

## 7.4 The Eighteen Largest Minority Nationalities of China

### *7.4.1 The Zhuang*

The largest of China's minorities in 2010 are the Zhuang, with a population of almost 17 million persons. Over 85% of them live in their own autonomous region, the Guangxi Zhuang Autonomous Region in south-western China. They are believed to be descendants of one of China's ancient ethnic groups, the Yue (CHEC 1985). Some hold, however that they were given an explicit identification and legitimacy by the Chinese Communist Party as recently as the 1950s (Kaup 2000). The Zhuang are heavily agricultural: in 2010, almost 70% of them were employed in agriculture.

### 7.4.2 The Hui

The second largest group is the Hui, with over 10.5 million people. Unlike most of China's minorities, they are spread throughout China and are the minority most residentially integrated with the Han. About three-fourths of them live in the Ningxia Hui Autonomous Region and in Gansu, Qinghai, Henan, Hebei, Shandong, and Yunnan, and in the Xinjiang Uygur Autonomous Region. They are a Muslim people and employ an Arabic script. Their ancestors date back to the "Islamic-oriented peoples from Middle Asia, as well as Persians and Arabs" who migrated into China in the early thirteenth century (Ma 1989). By intermarrying with other groups, particularly the Han, the Hui emerged. Their culture mainly developed during the Yuan Dynasty (1279–1368) when expelled Islamic artisans and tradesmen settled in China and began raising livestock and trading handicraft items. They attained higher social positions than the Han during the Yuan Dynasty (Poston et al. 2011). They have assimilated the Han culture more so than most of the other minorities (Gladney 1991; Ma 1989), and they have relatively high socioeconomic status compared with the other minorities.

### 7.4.3 The Man

The Man (also known as Manchu) are the third largest group, with around 10.4 million people. Almost two-thirds live in Manchuria, i.e., Liaoning, Jilin, and Heilongjiang in north-eastern China. In 1644, the Manchu military conquered China and established the Qing Dynasty (1644–1911), which ruled China for over 200 years (Guy 2002; Rawski 1998; Sen 2002). Like the Hui people, the Manchu are among the more socioeconomically advanced groups in China and rival the Han on most socioeconomic and demographic indicators.

### 7.4.4 The Uygur

The Uygur are another of China's predominantly Muslim groups. There were almost 10.1 million Uygur people in 2010, and virtually all of them reside in the Xinjiang Uygur Autonomous Region in far north-western China. They are mainly farmers, and their major products are wheat, rice, corn, and cotton (Ma 1989; Zhang and Zeng 1993). Uygur signifies "unity" or "alliance" in their language (CHEC 1985; Zhang and Zeng 1993). Their origins date back to nomads who lived in the third century B.C. In recent decades their relations with the Han have become increasingly antagonistic.

### 7.4.5 The Miao

The Miao are the fifth largest minority, numbering over 9.4 million people. They are mountainous residents of south-western China. Historically they were a migratory

people, first found in areas around western Hunan and eastern Guizhou about 2,000 years ago. Although they have their own language, many Miao have adopted Chinese, or the Yao or Dong languages, as their spoken language (Ma 1989; Shu 1989). They are much less developed socioeconomically than the Han and some of the other minorities because of their centuries of poverty and primitive living (Chang 2003).

### *7.4.6 The Yi*

The Yi are the next largest group, with a population numbering 8.7 million. Historically, they were based mainly in Yunnan and Sichuan, with settlements dating back more than 2,000 years. Although a Yi feudal economy was established in the late Yuan Dynasty, they later practiced a system of partial slavery. They are geographically distributed over mountainous areas in south-western China and are primarily engaged in farming and animal husbandry. They are not nearly as socioeconomically advanced as the Han peoples (Harrell 1990; Poston et al. 2006).

### *7.4.7 The Tujia*

The Tujia numbered nearly 8.4 million people in 2010 and are the seventh largest minority nationality. They mainly live in the mountain areas on the borders of Hunan, Hubei, Guizhou and Chongqing. Their ancestors settled there over 2000 years ago and were called "Wulingman." After the Song Dynasty, they were known as the Tuding or Tumin people. After the founding of the People's Republic of China, they were officially called Tujia (SNAC 1996). They had their first sustained contacts with the Han in the early twelfth century. Thereafter, they developed a farming economy and culture similar to the Han, and to this day their clothing and customs are similar to the Han. Most Tujia people speak and write Chinese, and the Tujia language is usually only heard in remote areas (Chang 2003).

### *7.4.8 The Tibetans*

The Tibetans are the next largest minority group, with almost 6.3 million people. They mainly live in the Tibet Autonomous Region, although some also reside in the neighbouring provinces of Sichuan, Qinghai, Gansu, and Yunnan. The Tibetan system of writing was created in the early seventh century and is still widely used today. Tibetans first began interactions with the Han through intermarriages during the Tang Dynasty (618–907 AD). The Han-Tibetan marriages between King Songzen Gampo and the Han Princess Wencheng in 641, and between King Chide Zuzain and the Han Princess Jincheng in 710, brought Han culture and advanced agricultural techniques from central China to Tibet, leading to unprecedented social and economic development. These advances, in turn, strengthened the relationships between the Tibetans, the Han and some of the other ethnic groups in China.

Buddhism first entered Tibet in the fourth century from Nepal and was adopted as the court religion in the seventh century (SNAC 1996). Lamaism, a branch of the Mahayana School of Buddhism, is the major religion of Tibetans (Chang 2003). Over 80% of the Tibetans are employed in agriculture, and they lag behind most of the other groups socioeconomically and demographically. A major and very interesting period of contact between Western peoples and the Tibetan people occurred in the late eighteenth century when Britain sought a commercial opening to China, from which European traders had been banned for centuries. The British sent an envoy to Tibet from India to seek assistance from the Panchen Lama, the religious leader of Tibet, to intervene with the Qianlong emperor in Beijing on behalf of the British (Teltscher 2006).

### *7.4.9 The Mongols*

The Mongol people number nearly 6 million, and most of them live in the Inner Mongolia Autonomous Region. In the early thirteenth century a Mongol Empire was unified from several northern tribes in and around Asia, and in 1272 the Mongols conquered the Southern Song, bringing all of China under the control of their Yuan Dynasty for almost one century (1279–1368) (Borchigud 1995; Khan 1995; Ma 1989). The Mongols were originally characterized by a nomadic life style but are now almost entirely in permanent settlements (CHEC 1985; Shu 1989).

### *7.4.10 The Dong*

There were almost 9 million Dong people in China in 2010. They live mainly in Guizhou and Hunan and in the Guangxi Zhuang Autonomous Region. The Dong people, as well as the Zhuang people, are descendants of the Yue (CHEC 1985). They have similar customs and traditions as the Zhuang. During the Ming and Qing Dynasties, they were known as Dongjia. They were formally named the Dong after the founding of the PRC in 1949. More than three-fifths of them are agricultural. They are especially known for singing and improvising lyrics (SNAC 1996).

### *7.4.11 The Buyei*

The Buyei minority numbered almost 2.9 million in 2010. More than 87% of them reside in southern Guizhou. They are closely related to the ancient Liao, Baiyue and Baipu peoples. Their written language system was not created until the 1950s, after the founding of the PRC, but it has not been adopted by most of the Buyei, who usually write in Chinese (SNAC 1996).

### 7.4.12 The Yao

The Yao had a population in 2010 of almost 2.8 million; they mainly live in southern China in Guangxi, Hunan, Yunnan, Guangdong, and Guizhou. Their origins may be traced to peoples who first settled in the Yangtze (Changjiang) River Basin. They resided for centuries in the hilly areas of the Nanling Mountains, which form the boundary between central and southern China. It has been said for centuries that every peak of the Nanling Mountains was inhabited by the Yao. These days they mainly speak the Chinese, Miao and Zhuang languages (SNAC 1996). Nearly three-fourths of them are agricultural, and they lag far behind the Han people in terms of socioeconomic development.

### 7.4.13 The Bai

The Bai people numbered 1.9 million people in 2010, and more than 80% of them live in the Dali Bai Autonomous Prefecture in Yunnan. They are especially proud of their heritage and ethnicity. In ancient times, Bai scholars were pioneers in astronomy, meteorology, medicine, painting and literature. These days, two-thirds of them are agricultural. Most Bai people speak Chinese (SNAC 1996).

### 7.4.14 The Koreans

About 1.9 million people in China are Korean, and most reside in the Yanbian Korean Autonomous Prefecture in Jilin Province. They are descendants of migrants from the Korean peninsula. The earliest immigrants were farmers fleeing a severe famine in the northern part of Korea in the late seventeenth century. They settled in the area in Jilin known as Yanbian. Other immigrants were landless Koreans who moved into the southern part of Manchuria at the beginning of the twentieth century (Ma 1989). In Yanbian, Korean is the official language in newspapers and in radio broadcasts. Yanbian University, founded in 1949, is operated by Korean-Chinese administrators and has trained a large number of Korean-Chinese professionals who now occupy important positions locally and nationwide (Suh and Shultz 1990). Along with the Manchu, they are the most socioeconomically advanced of all the minorities (Shu 1989).

### 7.4.15 The Hani

The Hani ethnic minority numbered almost 1.7 million people in 2010. Virtually all of them (almost 98%) live in Yunnan. They are believed to have originated from tribal peoples located south of the Dadu River in Sichuan in the third century B.C (Chang 2003). The Chinese government initiated a writing system for the Hani language in 1959, but it has not generally been adopted (SNAC 1996). Around 80%

of the Hani today are agricultural. There has been some contact between the Hani and the Han, and generally those with more Han contacts tend to be more economically and culturally advanced (Chang 2003).

### *7.4.16 The Li*

The Li people, with a population of nearly 1.5 million, are known as the islanders of China. More than 85% live in China's island province, Hainan. They are proficient in agricultural activities such as farming, fishing, and tree planting (SNAC 1996). The Li also descended from the ancient Yue people. They emigrated to Hainan from Guangdong and Guangxi provinces around 3,000 years ago (Gao 1984). They took the name "Li" toward the end of the Song Dynasty. Many Li people started using Chinese after the founding of the People's Republic of China (SNAC 1996).

### *7.4.17 The Kazakh*

The Kazakh group is another Muslim nationality, numbering almost 1.5 million people in 2010. Most (around 97%) live in the Xinjiang Uygur Autonomous Region. The Kazakh peoples descended from the Wusun during the Western Han Dynasty (206 BS–24 AD) but did not become a distinctive ethnic minority group until the mid-fifteenth century. The Kazakh people are agricultural, specializing in animal husbandry, mainly cattle, horses and sheep. They traditionally lived a nomadic life, but in recent centuries began engaging in trade with Han from central China and peoples from other neighbouring countries (SNAC 1996).

### *7.4.18 The Tai*

The Tai (also known as Dai) are the eighteenth largest ethnic group in China and numbered around 1.3 million in 2010. About 97% of them live in Yunnan on the fertile plain formed by the Lancang, Nujiang and Yuanjiang Rivers. The Tai people are closely related to the Lao and Thai peoples who form the majority populations in Laos and in Thailand. They excel at growing rice and tea. Their language belongs to the Zhuang-Dai branch of the Zhuang-Dong group of the Chinese-Tibetan language family (SNAC 1996).

## 7.5 How Assimilated Are China's Minorities with the Han?

China's 2010 census data do not provide direct information on the levels of assimilation of the Chinese minority populations. They do, however, provide information about the socioeconomic, demographic and geographic composition and distribution of the

minority groups and the Han, all of which provide clues about the degree to which each group is assimilated with the Han. Below we examine data on several socioeconomic and demographic variables for each of the 18 largest minority nationalities. Assimilation theory posits that the more similar these data for a particular minority group with respect to those of the Han, the more assimilated the minority group.

### *7.5.1 The Assimilationist Perspective*

The assimilationist perspective is a cornerstone of Western sociological research on minority and majority populations. It holds that ethnic and minority differences will tend to decrease over time as the majority and minority groups interact more freely. Milton Gordon was one of the first sociologists to set forth this perspective in his major statement published in 1964 (Gordon 1964). Over the years researchers have modified Gordon's approach so that sociologists these days usually recognize two main forms of assimilation, cultural and structural (Schoen and Cohen 1980). Cultural assimilation, usually the first to occur, involves the acceptance by the minority group of the cultural patterns of the majority and includes intermarriage and other forms of identification. Structural assimilation involves both the entry of the minorities into the institutions and settings of the majority and their general fusion with the social and economic structure of the society (Poston and Shu 1987). With structural assimilation, the minorities become similar to the majority sociologically and demographically.

### *7.5.2 Demographic and Socioeconomic Composition*

We have assembled for each of the 18 largest groups the following measures of socioeconomic and demographic composition: geographic dispersal, percentage of the population living in rural areas, Whipple's index, number of surviving children per woman as a measure of fertility, percentage of the labour force employed as professionals and party leaders, percentage of the population having completed at least some tertiary education, and percentage of the population illiterate. All of the measures are self-explanatory and are commonly used indicators of socioeconomic and demographic composition, save two: Whipple's Index and the index of geographic dispersal.

Whipple's Index is a measure of age heaping in a population. It is a popular rectangular-type age-heaping index; it measures specifically the degree of preference in a population for ages with the terminal digits of 0 and 5, and its calculation is restricted to persons in the age range 23–62 (Hobbs 2004). The index varies from a value of 0 (when the digits 0 and 5 are not reported in a population's age data) to 100 (when there is no preference for 0 or 5 in the age data) to a maximum of 500 (when only the digits 0 and 5 are reported in the age data) (Poston 2005, p. 37; Poston and Bouvier 2010). Research has shown that more traditional and isolated groups have a stronger tendency to heap their ages with numerals ending in 0 and 5 than socioeconomically developed groups (Poston et al. 2000).

**Table 7.2** Socioeconomic and demographic characteristics of China's 18 largest minority nationalities and the Han majority, 2010

| Minority group | Geographic dispersion | Population size | Rural population (%) | Whipple index | Fertility (children ever born) | Professional/ leader (%) | Some tertiary education (%) | Illiterate (%) |
|---|---|---|---|---|---|---|---|---|
| Zhuang | 0.26 | 16,926,381 | 65.63 | 101.97 | 1.60 | 4.77 | 5.65 | 4.75 |
| Hui | 0.91 | 10,586,087 | 46.50 | 101.28 | 1.48 | 8.42 | 9.36 | 8.57 |
| Manchu | 0.68 | 10,387,958 | 56.26 | 100.71 | 1.15 | 9.16 | 11.37 | 2.14 |
| Uygur | 0.01 | 10,069,346 | 77.62 | 116.93 | 1.64 | 4.71 | 6.35 | 3.51 |
| Miao | 0.75 | 9,426,007 | 74.37 | 99.56 | 1.70 | 3.68 | 4.40 | 10.25 |
| Yi | 0.56 | 8,714,393 | 81.12 | 98.34 | 1.71 | 3.33 | 3.78 | 14.30 |
| Tujia | 0.78 | 8,353,912 | 65.08 | 96.77 | 1.50 | 6.00 | 7.20 | 6.11 |
| Tibetan | 0.70 | 6,282,187 | 80.28 | 103.02 | 1.41 | 5.85 | 5.47 | 30.56 |
| Mongol | 0.49 | 5,981,840 | 53.81 | 101.16 | 1.23 | 10.71 | 14.24 | 3.31 |
| Dong | 0.65 | 2,879,974 | 69.53 | 97.87 | 1.57 | 5.24 | 6.17 | 6.62 |
| Buyei | 0.23 | 2,870,034 | 73.77 | 101.36 | 1.70 | 4.13 | 4.55 | 12.23 |
| Yao | 0.63 | 2,796,003 | 76.67 | 99.79 | 1.59 | 4.24 | 5.55 | 6.67 |
| Bai | 0.33 | 1,933,510 | 65.74 | 97.50 | 1.49 | 6.74 | 7.96 | 5.83 |
| Korean | 0.63 | 1,830,929 | 30.61 | 103.22 | 0.98 | 17.31 | 15.96 | 1.29 |
| Hani | 0.04 | 1,660,932 | 82.64 | 99.54 | 1.66 | 3.00 | 3.03 | 14.52 |
| Li | 0.25 | 1,463,064 | 73.83 | 102.39 | 1.75 | 3.47 | 3.95 | 6.49 |
| Kazakh | 0.06 | 1,462,588 | 76.91 | 102.12 | 1.50 | 8.60 | 8.82 | 1.59 |
| Tai | 0.06 | 1,261,311 | 67.68 | 101.23 | 1.48 | 3.59 | 4.03 | 11.29 |
| Han | 0.95 | 1,220,844,520 | 48.13 | 98.58 | 1.32 | 8.85 | 9.74 | 4.71 |
| *Summary data for the 18 minority groups* | | | | | | | | |
| Mean | 0.45 | 5,827,025 | 67.67 | 101.38 | 1.51 | 6.27 | 7.10 | 8.33 |
| Std. Dev. | 0.29 | 4,515,258 | 13.53 | 4.32 | 0.21 | 3.57 | 3.64 | 6.91 |
| Min Value | 0.01 | 1,261,311 | 30.61 | 96.77 | 0.98 | 3.00 | 3.03 | 1.29 |
| Max Value | 0.91 | 16,926,381 | 82.64 | 116.93 | 1.75 | 17.31 | 15.96 | 30.56 |

Sources: Authors' calculations based on PCO (2012)

The index of geographic dispersal is adapted from the so-called $M_1$ index set out by Gibbs and Poston (1975). It measures the degree of geographical distribution of a minority population across China's 31 major administrative areas. The more even or balanced the distribution of members of a group across the 31 areas, the higher the measure of geographic dispersal. The theoretical value of the index ranges from 0 (all members of a group are residing in one and only one Chinese province) to a value approaching 1 (members of a group are residing in every one of China's 31 areas and are equally distributed throughout these areas).

Table 7.2 presents the values of these eight demographic and socioeconomic variables for the 18 largest minority populations and for the Han majority. Almost half of the Han population resides in rural China. Koreans are much lower, at 31 % rural, and the Hui are at 47 %. Most of the other groups are considerably more rural than the Han; indeed nine of them (Uygur, Miao, Yi, Tibetan, Buyei, Yao, Hani, Li and Kazakh) are 70–80 % rural. The average minority group is 68 % rural.

In most of the minority groups, as well as the Han, there is minimal, if any, age heaping; their Whipple's values are all right around 100 (a value of 100 indicates no preference for ages ending in 0 or 5). Only the Uygur have a high amount of age heaping.

Han women in 2010 have a low fertility rate, with an average of 1.3 surviving children ever born. Korean women, on average, have below 1 surviving child, and the Manchu and Mongol women, below 1.2. Women in the remaining 15 groups have higher fertility rates than the Han, with women in four of the groups (Miao, Buyei, Yi and Li) having on average 1.7 or more surviving children.

Almost 9% of Han workers are employed in professional and party leader jobs. For the average minority group, 6% are so classified. For three of the groups (Manchu, Mongol, and Korean), the percentages are higher than that of the Han, with Koreans reporting over 17% of their workers employed as professionals or party leaders. The remaining groups have percentage values below that of the Han, and exactly the same pattern is found for the percentage of the population having completed at least some tertiary education.

Finally, few Han and minorities are illiterate. A mere 4.7% of the Han people are illiterate, and the average among the minority groups is only 8.3%. Tibetans have the highest value at almost 31%.

On the basis of the data reported in Table 7.2, we conclude that three of the 18 largest minorities are fairly well assimilated socioeconomically and demographically with the Han, namely, the Mongols, Manchu and Koreans. Indeed, on some measures, one or more of these groups, especially the Koreans, have higher values and are thus considered as more advanced than the Han. But most of the large minority groups are not well assimilated socioeconomically and demographically with the Han.

### *7.5.3 Geographic Dispersion and Socioeconomic and Demographic Structure*

Ecological and demographic studies of minority groups in the West suggest that the more geographically distributed a group, the higher its degree of socioeconomic and demographic modernity (Massey 1979; Poston and Shu 1989; Poston and Frisbie 2005). We now test this hypothesis in the Chinese context.

As noted earlier, in China the minority peoples live over vast areas covering about 50–60% of China's total landmass, but they are mostly concentrated in the country's western half. Due to various and special historical factors, some of the Hui live in compact communities in the Ningxia area, but the rest are scattered all over China in virtually all the big cities, and even in Xinjiang and Tibet. This wide distribution is reflected in their very high geographic dispersion index score of 0.91 (see Table 7.2). Among the 18 largest minority groups, the Uygur are the least geographically distributed, with a score of 0.01; this is also the lowest dispersion score of all 55 minority groups. Virtually all the Uygur live in Xinjiang. Hence, the Hui are the most dispersed around the country, and the Uygur are the least.

Following the ecological hypothesis just outlined, and drawing on the demographic and socioeconomic variables in Table 7.2, we expect the degree to which a minority group is geographically dispersed to be positively associated with

**Table 7.3** Zero-order correlation coefficients between index of geographic dispersion and seven measures of demographic and socioeconomic structure: minority nationalities, China, 2010

| | Demographic and socioeconomic structure | | | | | | |
|---|---|---|---|---|---|---|---|
| Geographic dispersion | Population size (%) | Rural population (%) | Whipple's index | Fertility | Professional/ leader (%) | Some tertiary education (%) | Illiterate (%) |
| 18 largest minority groups | 0.31 | −0.41*** | −0.42*** | −0.32*** | 0.30 | 0.31**** | 0.13 |
| All 55 minority groups | 0.38** | −0.49* | −0.36** | −0.43* | 0.38** | 0.34*** | 0.25*** |

****significant* at < 0.10 (one tail test)
****significant* at < 0.05 (one tail test)
***significant* at < 0.01 (one tail test)
**significant* at < 0.001 (one tail test)
Source: Authors' calculations

population size (the more dispersed groups will tend to be the larger groups), negatively associated with percentage rural, the Whipple's index and fertility (the more dispersed groups will be less rural, have less age heaping, and fewer children), positively associated with percentage professionals and party leaders and percentage with some tertiary education (the more dispersed groups will have higher percentages of professionals/leaders and persons completing some tertiary education), and negatively associated with percentage illiterate (the more dispersed groups will have lower illiteracy rates).

In Table 7.3 we present correlation coefficients between the geographic dispersion index and the seven variables reflecting demographic and socioeconomic structure. The correlations shown on the first row of the table are for the relationships among the 18 largest minority groups, and on the second row for the relationships among all 55 groups. We report levels of statistical significance for one-tailed tests.

For the most part, our hypothesized associations between geographic dispersal and demographic and socioeconomic structure are confirmed, both among the 18 largest groups and among all 55 groups. The significance levels of the correlations are lower when estimated among the 55 groups, but this is to be expected given issues related to degrees of freedom. The only relationship not in the hypothesized direction is that between dispersion and percentage illiterate. This likely occurs because there is so little variation in the illiteracy variable among the minority groups (see Table 7.2). Except for the Tibetans, all of the other larger nationalities have similar very low values on illiteracy. The consistent finding in ecological and demographic studies of Western minority populations that the more dispersed minority populations are more modernized demographically and socioeconomically than the less dispersed groups finds definite support in China in 2010.

## 7.6 Residential Segregation and Social Differentiation

We now investigate the degree to which residential segregation of a minority group from the Han is associated with the degree of social differentiation of the minority group from the Han. A classic hypothesis of sociological human ecology posits the existence of a positive relationship (Guest 1984), that is, the more similar the social characteristics of two populations, the greater their degree of residential propinquity.

### *7.6.1 The Park Hypothesis*

The hypothesized relationship between social and physical distance was first articulated by one of the founders of American sociology, Robert E. Park (1925, p. 14) in his observation that "social relations are […] frequently and […] inevitably correlated with spatial relations […] Physical distances are, or seem to be, the indexes of social distances". This relationship, in the words of Frisbie and Kasarda (1988, p. 640), "resides in the inequalities that constitute the overall system of stratification […] Greater affluence allows some persons to acquire housing in more desirable areas, leaving other locales for the less wealthy". Therefore, the greater the socioeconomic dissimilarity between groups, the greater the residential dissimilarity between them (Poston et al. 1998).

One of the first tests of this hypothesis was conducted by Duncan and Duncan (1955) in their analysis of the relationship between residential and occupational segregation in Chicago. Residential segregation between any two occupational groups was shown to be directly related to their social distance.

A key reason for testing the Park hypothesis with Chinese data stems from its implications for the assimilationist perspective. The historical situation of the minorities in China, however, suggests that the causal direction of the social and spatial relationship of a Chinese minority with the Han majority is likely reversed. The Chinese minorities are socially different from the Han because for centuries they have been spatially segregated from the majority Han. This is different from the situation in the West where minorities are spatially segregated from the majority because they are socially different from them.

### *7.6.2 Testing the Park Hypothesis*

We use data from the 2010 census on the provincial residence patterns of each minority group and the Han to calculate dissimilarity indexes of residential segregation of each group from the Han. When multiplied by 100, the index value for a minority group represents the percentage of persons in the minority group who would have to move to certain other provinces for their percentage distribution across China's 31 provinces to be the same as that of the Han. The higher the index value, the greater the degree of residential segregation of the minority group from the Han.

**Table 7.4** Values of four differentiation indexes between the Han majority and each of China's 18 largest minority nationalities (in 2010)

| Minority group | Differentiation index | | | |
|---|---|---|---|---|
| | Residence | Education | Marital status | Occupation |
| Zhuang | 0.8766 | 0.0886 | 0.0298 | 0.2282 |
| Hui | 0.5396 | 0.1177 | 0.0087 | 0.0893 |
| Manchu | 0.7847 | 0.0533 | 0.0182 | 0.1239 |
| Uygur | 0.9860 | 0.1378 | 0.0558 | 0.3636 |
| Miao | 0.7333 | 0.2381 | 0.0168 | 0.2400 |
| Yi | 0.8724 | 0.3557 | 0.0328 | 0.3618 |
| Tujia | 0.7723 | 0.1017 | 0.0109 | 0.1382 |
| Tibetan | 0.8838 | 0.4394 | 0.1435 | 0.3656 |
| Mongol | 0.8067 | 0.0559 | 0.0337 | 0.1954 |
| Dong | 0.8097 | 0.1319 | 0.0117 | 0.1696 |
| Buyei | 0.8567 | 0.2473 | 0.0228 | 0.2289 |
| Yao | 0.7857 | 0.1811 | 0.0487 | 0.2742 |
| Bai | 0.8702 | 0.1215 | 0.0031 | 0.2027 |
| Korean | 0.8016 | 0.1780 | 0.1040 | 0.2673 |
| Hani | 0.9560 | 0.3598 | 0.0285 | 0.3230 |
| Li | 0.9309 | 0.1149 | 0.1166 | 0.3484 |
| Kazakh | 0.9637 | 0.0895 | 0.0649 | 0.3154 |
| Tai | 0.9444 | 0.3188 | 0.0130 | 0.3407 |
| *Summary data for the 18 minority groups* | | | | |
| Mean | 0.8430 | 0.1850 | 0.0424 | 0.2542 |
| Std. Dev. | 0.1058 | 0.1155 | 0.0405 | 0.0887 |
| Min | 0.5396 | 0.0533 | 0.0031 | 0.0893 |
| Max | 0.9860 | 0.4394 | 0.1435 | 0.3656 |

Source: Authors' calculations

To calculate the three measures of social differentiation, we employ the same index of dissimilarity, but this time it is calculated with 2010 census data on the distributions of each of the minority populations from the Han majority, according to (1) seven different occupational categories; (2) seven different educational categories; and (3) four different marital status categories. Table 7.4 presents the values for the residential differentiation index and the three social differentiation indexes for each of the large minority populations, with summary statistics shown at the bottom of the table.

Looking first at residential segregation, the average minority population group has a score of 0.84, meaning that for the average group to have the same residential distribution as the Han, 84% of its members would have to move to certain other provinces for their distribution to be the same as that of the Han. The Hui have the lowest score, 0.54, while the Uygur have the highest score, 0.99, meaning that almost all the Uygur people would need to move to other provinces for them to have the same distribution as the Han. Three of the groups have segregation scores between 0.77 and 0.79, seven have scores from 0.80 to 0.88, and five have scores from 0.93 to 0.99. The minority populations are significantly segregated from the

**Table 7.5** Zero-order correlation coefficients between residential differentiation from the Han (D Index) and three measures of social differentiation from the Han. Minority nationalities, China, 2010

| Residential differentiation (D Index) | Measures of social differentiation | | |
|---|---|---|---|
| | Education | Marital status | Occupation |
| 18 Largest minority groups | 0.27 | 0.33*** | 0.77* |
| All 55 minority groups | 0.35** | 0.10 | 0.60* |

***significant* at < 0.10 (one tail test)
**significant* at < 0.01 (one tail test)
**significant* at < 0.001 (one tail test)
Source: Authors' calculations

Han majority, and for many of them their segregation scores are extremely high. According to the research of Massey and Denton (1988) on residential segregation in the United States, dissimilarity index scores above 0.80 are considered to be very high. Twelve of the 18 largest minority nationalities in China have very high levels of segregation from the Han majority.

The first social differentiation index we consider in Table 7.4 is educational differentiation. The higher the value of the index for a group, the more dissimilar the group's educational distribution compared to that of the Han. The Mongols have the lowest educational differentiation score, 0.05, meaning that for the Mongols to have the same educational distribution as the Han, only 5% of them would need to obtain higher levels of education. The average minority group has a differentiation value of 0.19. The most differentiated group is the Tibetan nationality.

The marital status differentiation score measures the degree of difference of a group's distribution from that of the Han across four marital status categories. The average minority group has a low score of 0.04, with a range from a low of 0.003 (the Bai) to a high of 0.14 (Tibetans). The Bai and the Han have nearly identical distributions across all four marital status categories. Overall, most of the minorities are much more similar to the Han with regard to marital status than they are different.

Occupational differentiation is the third social differentiation index. The average minority group has a score of 0.25, meaning that one-quarter of the group's workers must change to other jobs for their occupational distribution to be the same as that of the Han. The Hui have an occupational distribution most like that of the Han, with a score of 0.09. The Tibetans are most unlike the Han occupationally.

The Park hypothesis states that minority groups that are more socially different from the Han majority will be more residentially different, i.e. segregated from the Han. To test this hypothesis, we have calculated zero-order correlation coefficients between the residential differentiation index and each of the three social differentiation indexes (Table 7.5). The correlations shown on the first row are for the relationships among the 18 largest minority groups, and on the second row for the relationships among all 55 groups.

All the associations reported are positive, as hypothesized, and four of the six reach statistical significance. The relationship between residential segregation and occupational differentiation is by far the strongest. The correlations in Table 7.5 provide fair support for the segregation-social differentiation hypothesis.

## Discussion

Our research indicates that the 18 largest minority nationalities in China show varying levels of similarity with the Han. Data from China's 2010 census show that the Hui, the Manchu, and the Mongol groups appear to be more similar to the Han in social, demographic, and economic composition than the other groups, and may thus be said to be more integrated into Han society, while many of the other minorities are much less so. Also, as predicted by assimilation theory, those minority groups that are less geographically dispersed tend to be better off socioeconomically and demographically than those that are more dispersed.

There is an important exception: the Koreans, who are not distributed all around China; they live mainly in Jilin and Heilongjiang, although they are not as geographically isolated as the Uygur, the Tai, and the Hani. As already mentioned, they speak and write the Korean language and operate their own schools. Nevertheless, among the Chinese minorities studied in this chapter, the Koreans have one of the highest levels of socioeconomic development and the lowest fertility rate. One reason for their relative uniqueness could be their location. The two principal provinces where they reside, Jilin and Heilongjiang, comprise (with Liaoning) one of the most economically and industrially developed areas of China. Known at one time as Manchuria, this area in north-eastern China was heavily influenced by the Japanese through prior settlement and domination. The Koreans, although isolated geographically from the Han, have a geographic and ecological advantage unlike that of the other minorities—with the exception, of course, of their co-residents, the Manchu. Unlike the Koreans, however, the Manchu, who ruled China from Beijing for 250 years during the Qing Dynasty, are very similar residentially and socioeconomically to the Han. This advantageous sustenance base may be responsible in part for the more advanced socioeconomic and demographic standing of the Koreans (Poston and Shu 1987).

We also noted in this chapter that the geographic locations of the minority populations have been largely invariant for centuries. This situation is different from that in the United States, for instance, where the locations of the minority peoples are due largely to patterns of immigration to the country, the length of time the groups have been in the U.S., and differences in their rates of growth (Lieberson and Waters 1987). Thus, we argued, the causal nature of the relationship between spatial and social segregation in China is opposite to that in the United States. Nevertheless, our analysis here of the relationship between residential segregation and social differentiation of the minority groups from the Han suggests the viability and applicability, at least in part, of a principally Western-based hypothesis in a non-Western context. Our research has suggested that a Western-based ecological theory of residential segregation and social differentiation, while not completely appropriate for a country like China with its long history, provides many insights for understanding selected dimensions of the distribution of China's population.

In summary, we have undertaken here an in-depth descriptive examination of the largest Chinese nationality groups, and have considered in less detail the remaining groups. The research was conducted using a standardized methodology enabling

a closer comparison of the minority groups with each other and with the Han. We have shown that each group is quite distinct, and many are very different from one another in various demographic and socioeconomic dimensions.

Historical variation over the centuries has brought together many groups of people with considerable diversity. Though living under one nation, the minorities are very different geographically, a point noted especially in our analyses pertaining to geographic differentiation and residential segregation.

Also, our examination of various social and demographic characteristics, such as geographic dispersion, education, occupation, fertility and age heaping, reveals other major differences between many of the minority groups and the Han. For example, although since 1949 economic development and policies aimed at promoting minority educational and occupational attainment have increased access to formal education and better jobs, it seems that many of China's minorities today still remain significantly behind the Han with respect to educational and occupational attainment.

Finally, to the degree that Chinese policy seeks the socioeconomic advancement of the minority populations, our analysis suggests that to date this goal has been reached only among a few of the minority nationalities. Most are still some distance away.

## References

Attané, I., & Courbage, Y. (2000). Transitional stages and identity boundaries: The case of ethnic minorities in China. *Population and Environment, 21,* 257–280.

Bean, F. D., & Tienda, M. (1987). *The Hispanic population of the United States*. New York: Russell Sage Foundation.

Borchigud, W. (1995). Transgressing ethnic and national boundaries: Contemporary 'Inner Mongolian' identities in China. In M. J. Brown (Ed.), *Negotiating ethnicities in China and Taiwan* (pp. 160–181). Berkeley: Institute of East Asian Studies, University of California.

Chang, C.-F. (2003). *Fertility patterns among the minority populations of China: A multilevel analysis*. Unpublished doctoral dissertation, Department of Sociology, Texas A & M University, College Station, TX.

CHEC. (1985). *China handbook editorial committee. China handbook series: Life and lifestyles*. Beijing: Foreign Languages Press (In Chinese).

Dreyer, J. T. (1993). *China's political system: Modernization and tradition*. New York: Paragon House.

Duncan, O. D., & Duncan, B. (1955). Residential distribution and occupational stratification. *American Journal of Sociology, 60,* 493–503.

Eberhard, W. (1982). *China's minorities: Yesterday and today*. Belmont: Wadsworth Publishing Company.

Fairbank, J. K. (1992). *China: A new history.* Cambridge: The Belknap Press of Harvard University Press.

Fairbank, J. K., & Goldman, M. (2006). *China, a new history. Second enlarged edition*. Cambridge: The Belknap Press of Harvard University Press.

Fei, X. (1981). *Toward a people's anthropology*. Beijing: New World Press.

Frisbie, W. P., & Kasarda, J. D. (1988). Spatial processes. In N. J. Smelser (Ed.), *Handbook of sociology* (pp. 629–666). Newbury Park: Sage.

Gao, D. (1984). The Li people of Hainan island. In *China's Minority Peoples*. Beijing: China Reconstructs (In Chinese).
Gernet, J. (1996). *A history of Chinese civilization* (2nd ed.). Cambridge: Cambridge University Press.
Gibbs, J. P., & Poston, D. L. Jr. (1975). The division of labor: Conceptualization and related measures. *Social Forces, 53,* 468–475.
Gladney, D. C. (1991). *Muslim Chinese: Ethnic nationalism in the people's republic.* Cambridge: Council on East Asian Studies, Harvard University.
Gladney, D. C. (1994). Representing nationality in China: Refiguring majority/minority identities. *The Journal of Asian Studies, 53,* 92–123.
Gordon, M. M. (1964). *Assimilation in American life: The role of race, religion, and national origins*. New York: Oxford University Press.
Guest, A. M. (1984). The city. In M. Micklin & H. M. Choldin (Eds.), *Sociological human ecology: Contemporary issues and applications* (pp. 277–322). Boulder: Westview Press.
Guy, R. K. (2002). Who were the Manchus? *The Journal of Asian Studies, 61,* 151–164.
Harrell, S. (1990). Ethnicity, local interests, and the state: Yi communities in southwest China. *Comparative Studies in Society and History, 32,* 515–548.
Harrell, S. (1995). Civilizing projects and the reactions to them. In S. Harrell (Ed.), *Cultural encounters on China's ethnic frontiers* (pp. 3–36). Seattle: University of Washington Press.
Heberer, T. (1989). *China and its national minorities: Autonomy or assimilation*? Armonk: M.E. Sharpe, Inc.
Hobbs, F. (2004). Age and sex composition. In J. S. Siegel & D. A. Swanson (Eds.), *The methods and materials of demography* (2nd ed.). San Diego: Elsevier Academic Press.
Humes, K. R., Jones, N. A., & Ramirez, R. R. (2011). *Overview of race and hispanic origin, 2010. 2010 Census Briefs, C2010BR-02*. Washington, DC: U.S. Census Bureau.
Kaup, K. P. (2000). *Creating the Zhuang: Ethnic politics in China*. Boulder: Lynn Rienner Publishers.
Khan, A. (1995). Who are the Mongols? State, ethnicity, and the politics of representation in the PRC. In M. J. Brown (Ed.), *Negotiating ethnicities in China and Taiwan* (pp. 125–159). Berkeley: Institute of East Asian Studies, University of California.
Lieberson, S., & Waters, M. C. (1987). The location of ethnic and racial groups in the United States. *Sociological Forum, 2,* 780–810.
Ma, Y. (1989). *China's minority nationalities*. Beijing: Foreign Languages Press.
Mackerras, C. (1994). *China's minorities: Integration and modernization in the twentieth century*. Hong Kong: Oxford University Press.
Massey, D. S. (1979). Effects of socioeconomic factors on the residential segregation of Blacks and Spanish Americans in U.S. urbanized areas. *American Sociological Review, 44,* 1015–1022.
Massey, D. S., & Denton, N. A. (1988). The dimensions of residential segregation. *Social Forces, 67,* 281–315.
Park, R. E. (1925). The concept of position in sociology. *Publications of the American Sociological Society, 20,* 1–14.
PCO. (2002). *Population Census Office and National Bureau of Statistics of China, Zhongguo 2000 nian renkou pucha ziliao (Tabulation on the 2000 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.
PCO. (2012). *Population Census Office and National Bureau of Statistics of China, Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.
Poston, D. L. Jr. (1993). The minority nationalities of China. In International Union for the Scientific Study of Population (Ed.), *International population conference, Montreal 1993* (Vol. 3, pp. 483–495). Liege: IUSSP.
Poston, D. L. Jr. (2005). Age and sex. In D. L. Poston, Jr. & M. Micklin (Eds.), *Handbook of population* (pp. 19–58). New York: Springer .
Poston, D. L. Jr., & Bouvier, L. F. (2010). *Population and society: An introduction to demography*. New York: Oxford University Press.

Poston, D. L. Jr., & Frisbie, W. P. (2005). Ecological demography. In D. L. Poston, Jr. & M. Micklin (Eds.), *Handbook of population* (pp. 601–623). New York: Springer Publishers.

Poston, D. L. Jr., & Shu J. (1987). The demographic and socioeconomic composition of the major minority groups in China. *Population and Development Review, 13,* 703–722.

Poston, D. L. Jr., Micklin, M., & Shu, J. (1998). Spatial segregation and social differentiation in China. In M. Micklin & D. L. Poston, Jr. (Eds.), *Continuities in sociological human ecology* (pp. 283–298). New York: Plenum Press.

Poston, D. L. Jr., Jin Chu, I. H., Ginn, J. M., Jin-Kai Li, G., Hong Vo, C., Walther, C. S., Wang, P., Juan Wu, J., & Ming Yuan, M. (2000). The quality of the age and sex data of the Republic of Korea and its provinces, 1970 and 1995. *The Journal of Gerontology*, *4*, 85–126.

Poston, D. L. Jr., Chang, C.-F. & Dan, H. (2006). Fertility differences between the majority and minority nationalities in China. *Population Research and Policy Review*, *26*, 67–101.

Poston, D. L. Jr., Alnuaimi, K.W.S., & Zhang, L. (2011). The social demography of China's muslims. *Modern China Studies*, *18*, 14–72.

Rawski, E. (1998). *The last emperors: A social history of the Qing imperial institutions*. Berkeley: University of California Press.

Schoen, R., & Cohen, L. E. (1980). Ethnic endogamy among mexican American grooms: A re-analysis of generational and occupational effects. *American Journal of Sociology, 86,* 359–366.

Sen, S. (2002). The new frontiers of Manchu China and the historiography of Asian empires. *The Journal of Asian Studies, 61,* 165–177.

Shu, J. (1989). *Minority nationalities in China: Their social formation, geographical location, and differentiation from the Han majority*. Unpublished doctoral dissertation, Department of Sociology, University of Texas, Austin, TX.

Sinclair, K. (1989). *The forgotten tribes of China*. Mississauga: Cupress (Canada) Ltd.

SNAC. (1996). *State Nationalities Affairs Commission. China's minority peoples* (2nd ed.). Beijing: China Pictorial Publishing House.

Suh, D.-S., & Shultz, E. J. (Eds.) (1990). *Koreans in China*. Honolulu: University of Hawaii Press.

Teltscher, K. (2006). *The high road to China: George Bogle, the Panchen Lama, and the first British expedition to Tibet*. New York: Farrar, Straus and Giroux.

Terrill, R. (2003). *The new Chinese empire, and what it means for the United States*. Cambridge: Basic Books.

Zhang, W., & Zeng, Q. (1993). *In search of China's minorities*. Beijing: New World Press.

# Chapter 8
# Demographic and Social Impact of Internal Migration in China

**Delia Davin**

## 8.1 Introduction

Rural-to-urban migration was effectively proscribed in Maoist China through a system of household registration (*hukou*) whereby all individuals were registered in the place where they were born (Chan and Zhang 1999). The basic distinction was between those with an agricultural (or rural) *hukou* and those with a non-agricultural (or urban) one (See Inset 4.1 p.66). People with a rural *hukou* were not allowed to live in the urban areas, and they were effectively bound to the land (Cheng and Selden 1999). A huge labour surplus developed in the countryside as a result, and the considerable socioeconomic inequalities between rural and urban populations could not be mitigated by peasants seeking more income in towns and cities (Davin 1999).

Restrictions eased, de facto at least, with the beginning of the economic reforms in the 1980s. A freer labour market developed, and the burgeoning urban economy created a huge demand for labour, especially in coastal regions. Peasants began to move into the urban areas (Solinger 1999; Fan 2008), and large-scale internal migration became a dramatic feature of demographic change in China, involving the temporary or permanent movement of tens and then hundreds of millions people, mostly from rural towards urban areas. Only 4 decades ago—easily within living memory—80 % of China's population lived in rural areas and the vast majority were peasants. Over a very short period, migration and rapid urbanization have had powerful impacts on social stratification, living standards and ways of life, on age structures in the urban and rural areas, and on gender and intergenerational relations.

Some of the social impacts of this transformation were already visible in the early years of large-scale migration; others will take years to become apparent. This chapter focuses on the impacts of internal migration as they appeared around the time of the 2010 census. The first two sections look at the characteristics of

D. Davin (✉)
University of Leeds, Leeds, UK
e-mail: d.davin@leeds.ac.uk

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_8, 

migration flows and their impact on age and sex structure; gender differences in migration are examined, looking at the numbers involved, reasons for migration and the work performed by migrants. The third section looks at the lives of migrants in the urban areas while the following one describes the impact of migration on those left behind in the villages, with knock-on consequences for family life, gender and intergenerational relationships, the household division of labour and child-rearing. The fifth section also considers the impact of migration on gender equality and on rural/urban inequality more generally. Finally, the conclusion attempts to summarize the findings and to consider future prospects.

## 8.2 What the 2010 Census Shows About Migration—An Overview

Rural-to-urban migration was already reflected in the 1990 census when migrants temporarily resident in urban areas numbered around 30 million, and even more in the 2000 census, when they had increased to around 140 million (Liang 2007). The findings of the 2010 census imply a total of over 260 million internal migrants, defined as people who were living in a different place from that of their household registration for at least 6 months before the census (PCO 2012). This census also showed that China is becoming a majority urban society, the result of migration and of the steady absorption of villages into urban areas as towns have grown in size. In fact, the major impact of internal migration in China has been urbanization and resultant profound changes to both rural and urban society. The 2010 Census can contribute to an understanding of these impacts and their magnitude by the data it offers on some characteristics of the migrants, such as the numbers involved, their destinations, age structure and sex ratios, and reasons for migration. However, as we will see, its data can be problematic to interpret. Moreover, it is of course quantitative in nature, so other sources must be called upon for a qualitative understanding.

**Inset 8.1 Migration Data in the 2010 Census**

The enumeration of the whole population is reported in volume one of the published census while volumes two and three record data drawn from a randomly selected 10 % sample of the population, who were required to complete a longer, more detailed form. The section of the census entitled “migration” covers the population whose actual place of residence had been different from that of their household registration for at least the 6 months preceding the census. The migration section of the full census contains 39 tables providing data on numbers, current and original residence (city, town or rural), age, sex, educational attainment and reasons for migration.

Various peculiarities of the census definition of a migrant should be noted. For example, as children inherit the *hukou* of their parents rather than being registered in their birthplace, people born and brought up in the urban areas where they were living at the time of the census are counted as migrants in the census if, as the children of migrants, they inherited a household registration elsewhere. Such people may of course feel themselves to be neither rural nor migrant. On the other hand, people who had changed their place of *hukou* registration, however recently, and who lived in their new place of registration did not count as migrants under this definition. Some migrants effect such a change by purchasing an urban *hukou,* although the price in cities puts this beyond the reach of the majority (Wang 2010). Some urban places, especially smaller towns, are prepared to offer migrants local registration more freely. A *hukou* change may also come with an official work assignment to a new place. Marriage migrants (i.e. those who marry away from the place where they have their original *hukou*), appear as migrants until they change their registration to that of their marital home. This practice primarily affects figures for female migration because Chinese women customarily marry into their husbands' communities. However, there is often a considerable time lag between marriage and the acquisition of the new *hukou* registration, which of course confuses any attempt to interpret the statistics.

The returns for the 10% sample of the census in which a longer form was used provide additional data including data on the fertility of migrants as defined by *hukou*. The sample also partially breaks with the *hukou*-based definition of migration. Its migration tables include data on the population by current residence and place of birth, and on the population by current residence and usual residence five years earlier, thus treating mobility as the crucial element in defining a migrant.

**D.D**.

One of the most important findings of the 2010 Census was that for the first time in China's history, about the half of the population was urban, (see Table 8.1) an increase of nearly 13.5 percentage points since the census of 2000. The pace of actual urbanization is difficult to estimate with certainty as the definitions of what is urban and the regulations for enumerating rural migrants have changed from one census to another, but it is clearly extraordinarily rapid. The growth in the urban population owes nothing to fertility, which has been well below replacement level in the urban areas for more than 20 years (See Chap. 9). The re-designation of industrializing rural areas as urban areas has certainly made a contribution to the growth in the urban population, but the main factor has been the high level of rural-to-urban migration. Despite the fact that rural birth rates remain higher than urban ones, the urban population rose by 207 million between the censuses of 2000 and 2010, while the rural population fell by 133 million (PCO 2002; PCO 2012).

**Table 8.1** China's population according to the 2010 Census by residence in cities, towns and rural areas and by age (millions rounded to one decimal point). Absolute numbers followed by percentage distribution by age and type of residence

| | National | Cities | | Towns | | Rural | |
|---|---|---|---|---|---|---|---|
| | Millions | Millions | Percentage | Millions | Percentage | Millions | Percentage |
| Total | 1332.8 | 403.8 | 30.3 | 266.0 | 20.0 | 662.8 | 49.7 |
| 0–4 | 75.6 | 16.3 | 21.6 | 14.6 | 19.3 | 44.6 | 59.0 |
| 5–9 | 70.9 | 15.9 | 22.4 | 14.7 | 20.7 | 40.3 | 56.8 |
| 10–14 | 74.9 | 17.1 | 22.8 | 15.7 | 21.0 | 42.1 | 56.2 |
| 15–19 | 99.9 | 30.4 | 30.4 | 23.2 | 23.2 | 46.2 | 46.2 |
| 20–24 | 127.4 | 47.5 | 37.3 | 23.5 | 18.4 | 56.4 | 44.3 |
| 25–29 | 101.0 | 38.0 | 37.6 | 19.7 | 19.5 | 43.3 | 42.9 |
| 30–34 | 97.1 | 33.6 | 34.6 | 20.4 | 21.0 | 41.1 | 42.3 |
| 35–39 | 118.0 | 39.7 | 33.6 | 25.3 | 21.4 | 53.0 | 44.9 |
| 40–44 | 124.8 | 37.8 | 30.3 | 26.0 | 20.8 | 61.0 | 48.9 |
| 45–49 | 105.6 | 32.4 | 30.7 | 21.2 | 20.1 | 52.0 | 49.2 |
| 50–54 | 78.8 | 24.3 | 30.8 | 14.9 | 18.9 | 40.0 | 50.8 |
| 55–59 | 81.3 | 22.4 | 27.5 | 15.0 | 18.4 | 43.9 | 54.0 |
| 60–64 | 58.7 | 15.3 | 26.1 | 10.7 | 18.2 | 32.6 | 55.5 |

Any discrepancies are due to rounding
Source: PCO 2012

Some key features of what the 2010 census appears to show about the number, age and sex and educational level of migrants and reasons for migration are summarized in the discussion below. Some problems with the data will also be considered.

### *8.2.1 Who Migrates and Where?*

The magnitude of internal migration in China is reflected in Table 8.2. It shows that in 2010 almost 261 million people were living away from their original place of registration and were thus considered migrants. This table also shows that migrants who remained within their own province (175 million) were over twice as numerous as those who migrated to other provinces (86 million).

Unsurprisingly, Table 8.2 also indicates that the numbers of migrant children are small compared to the numbers of migrant adults in the working-age groups. This reflects firstly the fact that many migrants are in their late teens and early twenties and have not yet begun childbearing, and secondly, that in many cases the children of migrants are left in the villages to be cared for by one parent (usually the mother) or by grandparents or other relatives (CLB 2009; CLB 2013). The practice of leaving children in the villages also accounts for the fact that, as shown in Table 8.1, a considerable majority of children in the 5–9 and 10–14 age groups are resident in rural areas. The under-fives are more evenly distributed, with a slight majority in the urban areas, presumably showing that some migrant parents prefer to keep very young children with them. As Table 8.2 shows, migrant numbers grow rapidly in the 15–19 age group and peak in the 20–24 age group. They remain high for people

**Table 8.2** Migrants by age and sex in 2010 (in millions)

| | National | | | In the same province | | | In another province | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Males | Females | Sub-total | Males | Females | Sub-total | Males | Females |
| Total | 260.9 | 137.0 | 124.0 | 175.0 | 88.6 | 86.4 | 85.9 | 48.4 | 37.5 |
| 0–4 | 8.9 | 4.8 | 4.0 | 6.2 | 3.4 | 2.9 | 2.7 | 1.5 | 1.2 |
| 5–9 | 9.6 | 5.3 | 4.3 | 7.1 | 3.9 | 3.3 | 2.4 | 1.4 | 1.1 |
| 10–14 | 9.5 | 5.1 | 4.3 | 7.5 | 4.1 | 3.5 | 1.9 | 1.1 | 0.8 |
| 15–19 | 28.3 | 14.2 | 14.1 | 22.0 | 10.7 | 11.0 | 6.6 | 3.5 | 3.1 |
| 20–24 | 41.4 | 20.5 | 20.9 | 24.7 | 11.6 | 13.2 | 16.7 | 8.9 | 7.8 |
| 25–29 | 30.9 | 15.6 | 15.4 | 18.0 | 8.4 | 9.6 | 12.9 | 7.1 | 5.8 |
| 30–34 | 27.1 | 14.3 | 12.9 | 16.4 | 8.1 | 8.2 | 10.8 | 6.2 | 4.6 |
| 35–39 | 28.2 | 15.3 | 12.9 | 17.3 | 9.0 | 8.2 | 11.0 | 6.4 | 4.6 |
| 40–44 | 24.5 | 13.5 | 11.0 | 15.3 | 8.1 | 7.1 | 9.2 | 5.3 | 3.9 |
| 45–49 | 17.1 | 9.6 | 7.6 | 11.7 | 6.3 | 5.4 | 5.4 | 3.3 | 2.2 |
| 50–54 | 10.2 | 5.7 | 4.6 | 7.9 | 4.2 | 3.7 | 2.3 | 1.5 | 0.9 |
| 55–59 | 9.1 | 4.8 | 4.3 | 7.2 | 3.7 | 3.5 | 1.8 | 1.1 | 0.8 |
| 60–64 | 6.0 | 3.2 | 2.8 | 5.0 | 2.6 | 2.4 | 1.0 | 0.5 | 0.4 |

Migrants are defined here as people who have lived away from their place of household registration for at least the 6 preceding months. Discrepancies in the totals are due to rounding of figures to one decimal point

Source: Calculation from PCO 2012

in their 4th decade and fall away gradually thereafter. The result, as Table 8.1 also shows, is that whereas urban residents are the majority among adults aged 15–49, a majority of those over 50 live in rural areas.

Whether they have travelled a few tens of kilometres to another village or their local town, or thousands of kilometres to a large industrial area, rural workers who have left the place where they are registered count as migrants. Census data do, however, allow us to distinguish between those who stay within their province of origin (intra-provincial migrants) and those who venture further afield to other provinces (inter-provincial migrants). Table 8.2 shows that intra-provincial migrants total 175 million, i.e. 67% of all migrants, greatly outnumbering the 85.9 million inter-provincial migrants. Females show a somewhat stronger tendency to stay within their province (69.6% of all female migrations) than males (64.6% of all male migrations).

Intra-provincial migrants are also in the majority in each age group. Of the 28.3 million migrants aged 15–19, 22 million were still in their home province and only 6.6 million had moved to other provinces. There are significant differences at the peak ages for migration. In the 20–24 and 25–29 age groups, only 59.6% and 58.2% of migrants respectively stay within their own provinces. There is a small gender difference, males who stay within their own province representing 56.6% and 58.8% of the male totals in these two age groups, as opposed to 63.1% and 62.3% respectively for females. These figures probably indicate that young people prefer to stay closer to home when they first "go out", but travel further in search of better work once they have enough experience. The male/female difference in the 20–29 age groups may reflect the importance of marriage migration for women, which is most often intra-provincial. The propensity for inter-provincial migration

**Table 8.3** Reasons for migration by age and sex in 2010 (in percentages)

| | Total male migration | Total female migration | Males aged 20–24 | Females aged 20–24 | Males aged 25–29 | Females aged 25–29 |
|---|---|---|---|---|---|---|
| Total all reasons | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Work and trade | 50.2 | 42.1 | 60.2 | 51.1 | 79.1 | 59.1 |
| Family reunification | 11.8 | 16.8 | 5.4 | 6.8 | 4.1 | 9.5 |
| Study or training | 10.9 | 12.0 | 25.8 | 24.8 | 1.7 | 1.5 |
| Marriage | 1.6 | 8.4 | 0.5 | 10.0 | 2.0 | 17.4 |
| Move, relocation | 9.4 | 9.2 | 2.9 | 2.8 | 6.3 | 6.2 |
| Other | 16.1 | 11.5 | 5.2 | 4.5 | 6.8 | 6.3 |

Source: Calculation from PCO 2012

declines in the older groups, perhaps reflecting a more conservative attitude in older cohorts and also the effect of heavier family responsibilities.

According to Table 8.2, male migrants outnumber females at all ages in the national totals, except in the 20–24 age group in which females appear to slightly outnumber males. This is probably explained by the importance of marriage migration (which involves the movement of many women but few men) in this age group. In intra-provincial migration, females outnumber males in the 15–19, 20–24, 25–29, and even 30–34 age groups, reflecting the social norm that women should not go too far from their families, but of course also the importance of marriage in female migration. By contrast, the inter-provincial migration figures show that men migrate over long distances in significantly greater numbers than women at all ages, again reflecting social norms for the sexes. Nonetheless, significant numbers of females do live far from their places of origin even in their twenties, the prime age for marriage and childbirth in China.

### *8.2.2 Reasons for Migration*

The 2010 census recorded eight major reasons for migration. There is considerable potential overlap between the categories, but they give some idea of the various reasons for migrating and how these may differ (or not) between the sexes. The five major reasons for migration in the peak ages and their relative importance are shown for males and females in Table 8.3 below. It appears that "work and trade" is the most important reason for both sexes, followed by "family reunification", "study or training", and then "marriage".

Work and trade covers classic labour migrants who seek a better living in the urban areas, whether as workers in export processing zones, construction workers, service and domestic workers, or the self-employed working in the informal economy (Solinger 1999; Davin 1999; Fan 2008).

Labour migrants whose urban sojourn is long-term or successful may wish to bring their families to join them. In other cases, aged parents may sometimes join the households of adult migrant children. Labour migration thus creates a demand for family reunification. Of course when migrants of working age move to urban areas for family reunification, they may subsequently work in their new place of residence. As wives are probably more frequently recorded as moving for family reunification than husbands, this category is obviously likely to conceal many females who could also be considered as labour migrants.

Study and training is an extremely important reason for migration in the 20–24 age group. It logically falls off sharply thereafter because most people have completed their education by their mid-twenties. Interestingly, this reason explains almost as high a percentage of female as of male migration. The absolute numbers are also close, with male migrations for education and training numbering 3.931 million, compared with 3.906 million female ones (PCO 2012).

Migration for reason of marriage is far more common for women than for men due to the Chinese custom of women joining their husbands' families on marriage. As Table 8.3 shows, marriage is an important reason for all female migration, accounting for 8.4% of the total, and more important still for females in the peak marriage age groups of 20–29. For males, this reason is not very significant, at only 1.6% of total migration.

Women traditionally married into villages within a few hours walk of their homes (Tan and Gilmartin 2001), and even in the past, women achieved upward social mobility by marrying into wealthier areas (Lavely 1991). In recent decades, thanks to modern communications and increased mobility the marriage market now covers a much larger geographical area (Davin 2008). Women may now marry into distant parts of their own province or even into other provinces far from their place of origin. Marriage migration has also been stimulated by the shortage of brides brought about by an increasingly distorted sex ratio. Men may seek brides from poorer regions if their position in the marriage market in their own communities is weak for reasons such as economic status, age or health.

A further complication in considering the statistics is that although a woman who marries away eventually changes her household registration to that of her husband, she does not necessarily do so immediately. Therefore, while most other migrants do not change their *hukou* and will continue to be recorded in their original place of household registration at the census for as long as they remain away, marriage migrants disappear from this data from the time when they change their *hukou*.

## 8.3 Impact of Migration on Age and Sex Structures in Urban and Rural Areas

Because migration in China, as elsewhere, is selective by age and sex, it has the power to change sex and age ratios in the (mainly rural) sending areas and in the (mainly urban) destination areas. Migrants tend to be young and more men migrate

**Table 8.4** Sex ratios (expressed as males per 100 females) of the Chinese population by age group: national, urban (i.e. cities and towns) and rural areas

| | National | Urban areas (cities and towns) | Rural areas |
|---|---|---|---|
| Total | 104.9 | 104.9 | 104.9 |
| 0–4 | 119.1 | 118.1 | 119.9 |
| 5–9 | 118.7 | 118.6 | 118.7 |
| 10–14 | 116.2 | 116.6 | 115.9 |
| 15–19 | 108.2 | 106,2 | 110.5 |
| 20–24 | 101.0 | 102.9 | 98.5 |
| 25–29 | 101.3 | 100.9 | 101.8 |
| 30–34 | 104.0 | 103.1 | 105.3 |
| 35–39 | 104.8 | 105.3 | 104.2 |
| 40–44 | 104.0 | 106.2 | 101.9 |
| 45–49 | 103.8 | 107.0 | 100.6 |
| 50–54 | 105.1 | 105.6 | 104.7 |
| 55–59 | 102.1 | 100.5 | 103.6 |
| 60–64 | 103.5 | 100.7 | 105.7 |
| 65 and above | 92.7 | 92.5 | 92.8 |

Source: PCO 2012

than women, even though, as noted above, in the 20–24 age group, female migrants appear to slightly outnumber men.

Table 8.4 shows the sex ratios recorded for each age group in the 2010 census. The high sex ratios for the 0–15 year-olds fit with what we know of the distorted sex ratios at birth and among children in the Chinese population due to son preference and sex-selective abortion (Attané 2013).

However, if we look at young adults, and especially the 20–24 and 25–29 age groups, the number of males per 100 females is unexpectedly low despite the fact that at the time of these cohorts' birth (between 1980 and 1990), the sex ratio was already highly male-biased (Cai and Lavely 2003; Cai and Lavely 2007). The low sex ratio in the rural areas among 20–29 year-olds cannot be explained by disproportionally high male migration since total female migration in these age groups is higher than total male migration. The propensity for male migrants to go to urban areas rather than other rural ones is slightly higher but this is insufficient to explain the rural sex ratio. Moreover, if we turn to the sex ratio among young adults for the country as a whole, and the sex ratios for the urban areas, we again find that there are surprisingly few males per 100 females. International Chinese migration, is known to be predominantly male, but is not high enough to provide an explanation (Shi 2010), and nor is male mortality in these age-groups—though especially high for rural men in the poorer provinces (Banister 2009)—sufficient to explain the low sex ratios. The discrepancy is particularly striking among young adults aged 20–24 and 25–29 in 2010, who were aged 0–4 and 5–9 in 1990, and 10–14 and 15–19 in 2000. Table 8.5 shows that the sex ratio in the cohort aged 20–24 in 2010 declined from 110.2 in the 1990 census to 108.8 in the 2000 census and to 101.0 in the 2010

**Table 8.5** Sex ratios in the corresponding age-cohorts at the last 3 censuses (1990, 2000 and 2010)

| Age in 1990 | Sex ratio in 1990 | Age in 2000 | Sex ratio in 2000 | Age in 2010 | Sex ratio in 2010 |
|---|---|---|---|---|---|
| 0–4 | 110.2 | 10–14 | 108.8 | 20–24 | 101.0 |
| 5–9 | 108.2 | 15–19 | 105.4 | 25–29 | 101.3 |
| 10–14 | 106.7 | 20–24 | 102.8 | 30–34 | 104.0 |
| 15–19 | 105.4 | 25–29 | 105.0 | 35–39 | 104.8 |

Sources: PCO 1993; PCO 2002; PCO 2012

census. The corresponding decline for the cohort aged 24–29 in 2010 was 108.2 when they were 5–9 in 1990, 105.4 ten years later in 2000, and 101.3 in 2010.

The plausible explanation would seem to be that the census somehow omits significant numbers of men in these age groups. Turning to the very succinct editors' notes for the published census, point 8 explains that its results do not include China's 2.3 million servicemen, or the 4.65 million people whose residence is "difficult to determine". The servicemen are likely to be predominantly male and in their twenties so that their omission would make up for some of the discrepancy. In fact, the sex ratio in the 20–39 age group increases by 1 point when the 2.3 million servicemen are included, if they are assumed to be male (from 101.6–102.7). In addition, it is likely that the 4.65 million whose residence was "difficult to determine" were migrants whose mobility puts their residence in doubt. It may be that the nature of the employment of male migrants as construction workers, truck-drivers, self-employed handymen and so on makes it easier for them to avoid enumeration than it is for women who work in large manufacturing plants, the service industries and as domestics (Solinger 1999). The census does not explain how the estimate of 4.65 million was calculated but it could be an underestimate. Migrants have reasons to shun contact with bureaucracy. For a long time the *hukou* system made it difficult or impossible for rural people to live in the urban areas. Even when restrictions were eased, rural migrants without permits were sometimes rounded up and sent back to their villages. They often have to pay fees or bribes for the papers they need to reside legally in cities (Davin 1999; Zhang 2001; Murphy 2002; Jacka 2006; Liu 2007; Fan 2008)

Despite the data problems discussed above, Table 8.5 does bear out the generally accepted understanding that migration is reducing the proportion of men among young adults in the Chinese countryside. However, it must be said that these discrepancies in the sex ratios throw doubt on the migration figures in the census, at least for these age groups.

Figure 8.1, which shows the populations by age in urban and rural areas, confirms the fact that as the young leave for the urban areas, the rural areas are left with more than their share of the very young and the old. The under-15s make up 18.2% of the rural population as opposed to 14.1% of the urban population (cities and towns). At the other end of the scale, despite the fact that life expectancy is over five years higher in the urban areas (Wang and Mason 2007), 28.6% of the rural

population is over 50 as opposed to 23.1 % in urban areas. Of course, the percentage of children in the rural population is also affected by the fact that rural fertility rates are higher than urban ones.

**Inset 8.2 Internal Migration: A Defining Feature of Demographic Growth at the Provincial Level**

The 2010 census results indicate that while China's total population is still growing, albeit at a slow pace, demographic growth at provincial levels shows increasing contrasts.

It is usually perceived that population growth tends to be slower in socio-economically more developed areas, and faster in the less developed ones. But this rule does not seem to be applicable to the results of the 2010 China census, where the most developed coastal provinces are experiencing extraordinary demographic growth, while the populations of some central and western provinces that still lag behind in terms of economic development, have recently shown negative growth. For example, Hubei's population fell by 2.27 million (−3.82 %) between 2000 and 2010, that of Chongqing by 1.67 million (−5.46 %), that of Sichuan by 1.93 million (−2.34 %), and that of Guizhou by 0.5 million (−1.42 %). At the same time, while the average annual population growth rate between the two censuses for the whole country was only 0.6 %, the population of Shanghai, for instance, increased by 6.61 million (+40.3 %) with average annual growth of 3.24 %, and that of Guangdong by 19.10 million (+22.4 %), with average annual growth of 1.90 %, making Guangdong the most populous province in China (104.32 million).

Interestingly, while the registered (*hukou*) population of Shanghai has been experiencing negative natural growth since 1993, its de facto population is actually becoming younger on the whole. The proportion of elderly people (age 65 and above) fell from 11.53 % in 2000 to 10.12 % in 2010, while for the whole country it increased from 6.96 to 8.87 % over the same period. By contrast, Chongqing, located in the less developed western region of China, was the most severely affected by population ageing according to the 2010 census (PCO 2012).

These unusual demographic patterns are explained by large-scale population migration from one province to another within China. In fact, the population reduction in provinces such as Sichuan, Guizhou, and Hubei, etc. is not due to lower birth rates than death rates, but to tremendous out-migration which not only reduces natural growth, but even reverses the direction of overall demographic growth from positive to negative. By the same token, because of the large number of young migrants moving to Shanghai, for instance, population ageing has been "diluted", and the pace of population

growth has been pushed upward. Of the 6.61 million increase in the Shanghai population between 2000 and 2010, 86.4% was due to in-migration (with 5.71 million in-migrants over the period). In Guangdong, 46.6% of the total population growth in the inter-censal period 2000–2010 was due to in-migration, with a 85.7% increase in the migrant population over the period.

Meanwhile, the out-migration of large numbers of young people from central and western provinces is aggravating the ageing process in the departure regions: Chongqing, is now the province with the highest percentage of older adults; 11.56% of its population is aged 65 and above, higher than in Shanghai (10.12%), and almost twice the level observed in Guangdong (6.75%). In Guangxi, the fact that the de facto population is several million less than the total registered (*hukou*) population simply indicates that many people, though registered in Guangxi, actually live somewhere out of the province.

Demographic change is the combined result of natural growth and migration flows. Although the dramatic expansion of internal migration since the reforms and opening-up policy initiated in 1978 is a well-known phenomenon, the 2010 census indicates that growth due to migration may have surpassed natural growth for the first time in China's demographic history since 1950. All in all, it clearly demonstrates that China is entering a period of demographic dynamics dominated by migration rather than mortality or fertility.

Negative growth driven by out-migration is not limited to a few isolated cases in China, but is a widespread phenomenon that covers more than a hundred prefectures across 23 provinces. This new situation challenges the traditional perception of demographic dynamics. For several decades, it was widely believed that population change is mainly determined by fertility, and so attention focussed primarily on fertility trends. But the results of the 2010 census suggest that this is no longer the case for China, where fertility and mortality are having less impact on the overall situation, while population movements and migration are playing an increasingly important role in demographics at the provincial level. This will certainly have a profound impact on China's future development.

**B.G.**

**References:**

PCO (2012) Population Census Office and National Bureau of Statistics of China, *Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 Population Census of the People's Republic of China*), Beijing: China Statistics Press.

United Nations (1973) The Determinants and Consequences of Population Trends: New Summary of Findings on Interaction of Demographic, Economic and Social Factors. Volume 1. New York: United Nations.

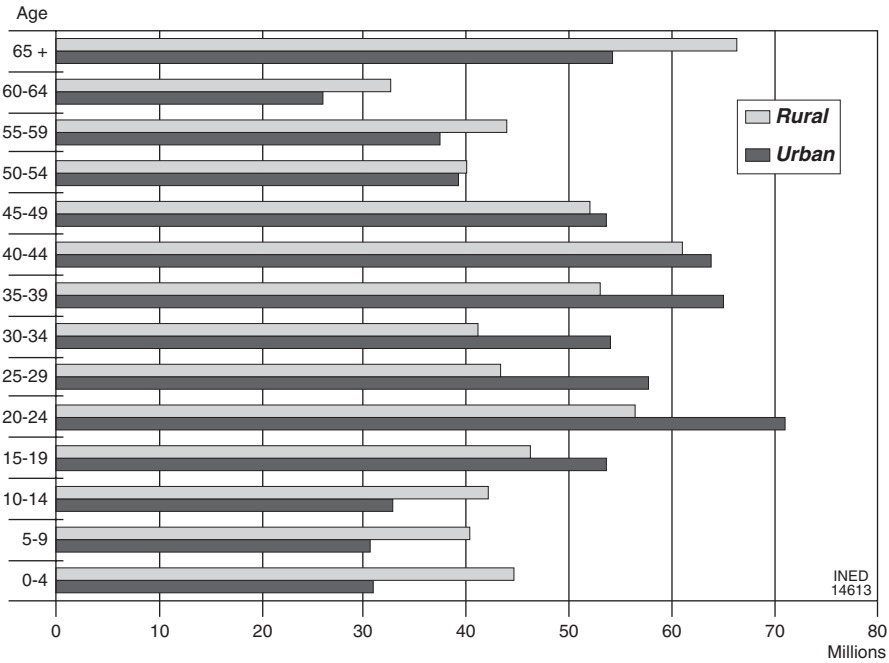



**Fig. 8.1** Age structure of urban (cities and towns) and rural populations in 2010 (Source: PCO 2012)

## 8.4 Migrant Life in the Cities

### *8.4.1 Migrants and Non-Migrants: A New Social Stratification*

Labour migration to the cities is attractive to young unmarried people in the countryside. They are drawn not only by the pay but also by the idea of seeing the world outside their villages and enjoying urban lifestyles. But they are often disappointed by the reality of long hours, repetitive work and all-too-frequent pay arrears. In the early years they often react to such difficulties by changing jobs frequently. Moreover, it is very difficult for migrants to access good accommodation, healthcare, and education for their children.

The urban areas to which rural migrants go in search of a better living vary from the major cities to small country towns, and the type of destination greatly affects migrant experiences.[1] Although many migrants find work in these large cities and

[1] Chinese censuses distinguish only between *chengshi* (cities) and *zhen* (small towns, variously translated in English as towns, townships or county towns). Together, the inhabitants of the cities and the towns are considered "urban" in contrast to the rural (*xiangcun* or *xian*) population. However, these three categories conceal a much greater complexity. China's established cities

hold temporary resident permits there, it is particularly difficult for them to obtain permanent urban *hukou* in such settlements. This is also true of the most successful of the urban settlements, such as Shenzhen in Guangdong, which have developed as export processing zones. By contrast, some of the medium-sized cities grant permanent *hukou* comparatively easily to migrants who fulfil conditions on qualification, employment and income. Small towns (*zhen*) generally have the most relaxed attitudes (Fan 2008; Wang 2010).

Although *hukou* regulations have been relaxed in post-reform China, there is still considerable discrimination against rural people in urban areas, as migrants need to obtain permits to live there and their entitlements are different to those of urban residents. Moreover, they are better treated in some destinations than in others, but in general they have less access to, and have to pay more, for healthcare and child education. Their accommodation is also usually much poorer, and despite recent condemnation of urban and local protectionism, many employers continue to exclude migrants from the better jobs by an explicit requirement for a local *hukou* (Murphy 2002; Knight and Yueh 2004; Davies and Grant 2008).

Informal discrimination against rural migrants is facilitated by the fact that they tend to look different to their urban counterparts, to dress differently, speak different dialects and be less educated (Zhang 2001). But it is the *hukou* system that makes the division between urban and rural people so profound and so difficult to bridge, even when rural people leave the countryside behind. This division is fundamental to urban society in China today and is reflected in vast differences between the lives of rural migrants and those of residents registered locally.

### *8.4.2 Migrants' Vulnerability in the Workplace and the Labour Market*

The discrimination against the population with a rural *hukou* is of many kinds. As migration has developed, more and more migrants have settled permanently in the urban areas. The injustice of their continued exclusion from the employment opportunities and the welfare, health and education entitlements enjoyed by those with an urban *hukou* has therefore become more glaringly obvious. The *hukou* system has given rise to a caste-like form of social stratification under which workers with a rural *hukou* are condemned to be second-class citizens.

Migrants occupy many different occupational niches in urban settlements. In general they are poorly paid compared with urban residents (Wang 2010). Rural migrants, both male and female, are employed in huge numbers in the assembly line manufacturing that has grown so rapidly in the past forty years. Migrants also take on unpleasant or dangerous jobs such as construction work or waste sorting

such as Beijing, Shanghai, Nanjing, Wuhan, Guangzhou, Chengdu and Chongqing contain huge, densely populated built-up areas, which are clearly urban. However, the outlying areas under these city governments may be much more rural in character and some of their inhabitants may still be engaged in agriculture.

and disposal. This labour force is largely but not exclusively male. Migrants also work in the service industries as waiters, cooks, cleaners, security guards and so on. Female migrants often work as maids or nannies in well-off families. Migrants may also be employed or self-employed in small family restaurants, tailoring establishments, garment shops and market stalls.

Different occupations are associated with different types of accommodation and lifestyles. It is common for migrants employed in large-scale manufacturing, especially those in export processing zones to live in dormitories in which single-sex rooms are shared by six to ten young people (Pun 2005), while construction workers on sites often share temporary shacks thrown up to accommodate them (Pai 2012). Single-sex accommodation of this type is clearly unsuitable for families, and the *hukou* system, which makes permanent settlement in the urban areas difficult for migrants, exacerbates these difficulties. By contrast, traders and those who run family businesses tend to be better off and often live in family groups (Zhang 2001).

Another aspect that increases migrants' vulnerability is their exclusion from the welfare system. Job-related welfare entitlement was once the norm in China, but is becoming less common, and those without an urban registration are specifically excluded from the system. Instead, they are joining the growing number of contribution-based medical and pension schemes. There are now various government social security schemes designed for migrant workers. However, coverage of migrant workers remains extremely low compared with that of regular urban workers. The cost is high by the standards of migrant workers, benefits are not usually portable and qualification times are long for members. These schemes are clearly unsuited for a migrant workforce characterized by mobility and short-term employment. Despite many government measures, surveys reveal that fewer than 5 % of migrant workers were covered by social protection in the late 2000s (Song and Appleton 2008).

The official justification for the exclusion of migrant workers from urban entitlements was that their rural registration gave them the right to farmland in their home village that they could use as a security fallback. Many migrant workers do in fact use their villages in this way. They go to the urban areas to maximize earnings for a few years but go home if they are unable to find work or fall sick. They also return to the villages to marry and have children. Given that urban accommodation for migrants is usually very poor, working hours long and conditions hard, this is rational behaviour (Murphy 2002).

This system leaves those with rural registration very vulnerable. The majority of migrant workers are young and healthy, but the enforcement of workplace health and safety is poor in China and migrant workers account for a disproportionate share of occupational injury morbidity and mortality (Fitzgerald et al. 2013). In 2011 and 2012, there were approximately 200 work-related deaths each day in China[2] and 330,000 workplace accidents, of which migrant workers made up 70 % of the victims; Respiratory diseases are common among construction workers and again the majority of the victims are migrants (CLB 2013). Under this system, the

[2] 2.1 "*China stresses workplace safety*". China Daily. 4 Feb 2012.

countryside functions not only as a nursery and a retirement home for the families of migrant workers, but it also has to absorb the sick, disabled or injured workers who are spewed out by an industrial system that has a voracious appetite for healthy young recruits.

The gulf between regular and migrant workers created by the *hukou* system in the cities also has consequences for class-consciousness. The interests of the established working class are to some extent in competition or even in conflict with those of migrant workers, as migrants work longer hours for less pay than non-migrants and the latter therefore fear that they will be undercut. Local protectionism is rife, and it is clearly in the interests of those with an urban *hukou* to exclude migrant works from the better jobs (Davies and Grant 2008; Li 2013). However, migrant workers have become more active in defence of their rights and there are many reports of industrial action, walk-outs, riots and even suicides by migrants protesting against ill-treatment. But it is not easy for this highly mobile, often temporary workforce to organize, especially given the ambivalent attitude of the authorities towards such action (Lee 2007; Chan and Pun 2009).

China's central government is aware of the indignation of many migrant workers about the way they are treated, fears the social unrest it may cause and regularly issues regulations designed to right the wrongs of migrant workers and promote equality. The central importance of the *hukou* system in inequality is certainly understood and its reform is constantly under discussion (Davies and Grant 2008; Chan and Buckingham 2008). However, Beijing, is also reluctant to alienate the established urban population and urban local governments, which would have to foot the bill if migrants' entitlements were to be improved (Wang 2010). Local governments are in competition for domestic and foreign investment in local enterprises. Their fear that the stricter enforcement of health and safety at work and social protection for the labour force would drive away investment, and their strong local protectionism make it more difficult for central government to impose reform (Davies and Grant 2008).

### *8.4.3 Marginalization of Migrants' Children*

When children migrate with their parents, they are a marginalized group compared to other children in the urban areas. They suffer the same sort of discrimination as adult migrants, are often easily distinguished by differences of accent and appearance, and tend to live in the poorest districts.

A survey by the Women's Federation based on the 2010 census estimated that there were 35.8 million children from rural migrant families in the urban areas, representing a substantial increase with respect to 5 years earlier (CLB 2013). Such children have the advantage of continuing care from their parents, but they have problems too. There is concern that they often live in inadequate overcrowded conditions, rarely have access to good daycare, have poor quality education or none at all, and may have to accompany their parents to workplaces such as market stalls, workshops or restaurants where there is little opportunity for play.

The biggest problem for these children is access to schools. In the past, children with rural *hukou* were frequently simply excluded from urban schools. Their parents were obliged either to send them back to the villages, to accept that they would not be educated, or to seek out special schools for them, which were set up in many urban areas, especially in migrant enclaves, by members of the migrant community and by social activists. However, such privately run schools are usually poorly accommodated and equipped, and their staff under-qualified. Many of them have been closed down by local governments, often using their deficiencies as a pretext (Lu 2006).

Although migrant children now theoretically have the right to attend public schools, their parents have to produce numerous documents — such as temporary residence permit, work permit, household registration book and certificate of good standing from their place of origin — merely to apply for a place. Moreover migrant families are often charged extra fees. When migrant children enter these schools, they tend to suffer discrimination and find it hard to make local friends. In these circumstances they may drop out or choose to go to poor quality private migrant schools.

It is estimated that nationally 2% of migrant children are not in school, but this rises to 3.5% in Beijing, 5.1% in Shanghai and 5.3% in Guangzhou (CLB 2013). Perhaps more serious is the fact that so many migrant children receive poor schooling, have their schooling disrupted by school closures or their parents' moves, or are simply discriminated against within the system. Those few who progress so well that they can pass the national university entrance exam are further disadvantaged by a widely enforced ruling that they must pass the exam not in the city where they received their schooling but in their own home towns, where the school curriculum may be different.

## 8.5 The Left-Behind

Migration draws the young away from the villages from the age of about 15, and as we have seen, this means that children and older people are over-represented in rural communities. Migration has had a great impact on the social and family lives of people with a rural *hukou*, both in urban and rural areas. The impact is of course different for those who migrate and those left behind, for males and females, for returnees, and for children, young adults and older people. In particular, the children left behind in the migration process are a source of growing concern for the Chinese authorities.

### *8.5.1 The Left-Behind Children*

Left-behind children are much discussed as a social problem in the Chinese media. They are defined as children left behind in the villages when one or even both

parents become migrants. Estimates of numbers vary, but they are a group of major numerical importance. A survey by the Women's Federation based on the census of 2010, found that there were about 61 million such children under the age of 18, amounting to about 22% of all Chinese children and about 38% of rural children (CLB 2013).

A survey of migrant villages in Gansu, Hebei, Jiangsu and Hubei provided considerable detail on the lives of left-behind children. In the villages surveyed it found that almost half the children had one or two parents who worked on a temporary basis in urban areas (Ye et al. 2011). Of these, 56.4% were cared for by a parent who had stayed behind, 32.2% by their grandparents, and 4.1% by other relatives. The rest lived with non-relatives or took care of themselves. The normal pattern (82% of cases) was for the father to be away. In 15% of cases both parents were away and in only 2.5% of cases the mother was away and the father present. Parents worried about the care of their children and thought it would be better for one parent (the mother) to stay at home. Only severe economic pressure made both leave, but their straitened circumstances also made it difficult to take the children with them because they would have no time to care for them and because costs in the urban areas, especially for schooling, are high.

The survey also found that while the economic status of such children was relatively good thanks to remittances sent by their parents, they were deprived of contact with them. Although almost two thirds of the absent parents were working in their home province, it was usually too expensive for them to make frequent visits. Most came two or three times a year and stayed for only a short time. Moreover, absent parents had only limited contact with their children: 88% made phone calls but their conversations with their children were reported as short and stilted. A very few kept in touch by post or email or organized visits from their children to the urban areas.

When the father migrated on his own, the mother's workload greatly increased. Farm work left them little time to care for the children, doing the laundry and cooking. Grandparents played a greater role in childcare and the children themselves took on more work on the land and in the household. But when both parents departed, leaving the grandparents as the sole carers, there were likely to be more problems. Grandparents were not strong enough for the combined burden of farm labour, household work and childcare. They tended to be impatient with the children, and as they had little education, they could not help the children with schoolwork. Their knowledge of hygiene and nutrition was inadequate and it was felt that these children were dirtier and less well cared for. Teachers reported that left-behind children were more often late for school. The children themselves spoke of feeling lonely and isolated, missing their parents and wanting someone who could help them with schoolwork. Almost half the children said they would like to go to live with their parents, but 44%, perhaps recognizing reality, said that they would not.

The picture is not entirely negative, however. The survey also found that the left-behind children were used to taking care of themselves and had a good sense of the value of money. Touchingly, they spoke of wanting to go to college and get good

jobs so that they could help their parents. Other research has found that the left-behind children are likely to stay at school longer that the children of non-migrants, presumably because money is less of a problem.

Left-behind children are often sad or lonely and they gain an early consciousness of life's pressures (Ye et al. 2011). On the other hand, the media panic about the problems of left-behind children may be exaggerated. The idea that large numbers of such children lack discipline, get involved in crime, have serious accidents, or become pregnant is exaggerated. In terms of nutrition, clothing, schooling and the amount of work they are expected to do they are probably better off than any other generation of rural children in China, yet compared with their peers they obviously have a more disrupted family life.

### *8.5.2 An Increased Burden on Older People*

In rural society, the word "*lao*" ("old") is added to people's names from about the age of 45. By that age, some of their children at least will have married and they are likely to be grandparents. The woman will be starting to hand the heavier work over to her daughter-in-law. She might play a role in caring for her grandchildren so that her daughter(s)-in-law are free to do heavier work on the land or in the household, but traditionally she would not be expected to do everything for the children. Similarly, the older man, while possibly maintaining considerable authority, would expect to pass work on gradually to his son(s). As the older couple become less physically able, a process that may be quite rapid after a lifetime of heavy work on the land, they leave increasing amounts of work to the younger generation. When they are no longer able to work, they rely on their sons for support and care (Yan 2003).

When migration draws young people away from the land, the traditional intergenerational contract changes. The older generation must continue to do a considerable share of the farming, or even all of it, until (and if) their children come home. If their son marries and leaves his wife and child(ren) in the village, there is also a burden of childcare to be shared. If the young woman goes to the city with her husband to work as a migrant labourer, the childcare may be left completely to the grandparents. These childcare duties, assumed primarily by women, are felt by many to be exhausting and a source of anxiety. Moreover, the general cultural perception that older rural women lack the ability to care properly for children adds to their worries and undermines their self-confidence (Murphy 2004).

The reduction of the rural labour force, and in particular the departure of so many young adults, may also force changes in traditional patterns of cultivation. Where remittances are being received it is possible to hire labour or increase mechanization. In other places land may be left uncultivated or planted with less labour-intensive crops, resulting in poverty or increased household dependence on remittances. (Murphy 2004; Bramall 2008).

For many households, a proportion of their ordinary living expenses are covered by remittances. Migrant remittances also allow some households with successful

migrant members to live better. Money sent home is used to finance marriages, the building of new houses and medical fees for family members who fall sick. Filial children send money back to help their aged parents, pay for home improvements and give them gifts such as mobile phones so that the family can stay in contact (Murphy 2002). But such arrangements have to be negotiated between individuals. The help received by the older generation depends heavily on their relationship with their children. There are clearly cases where they feel overworked, lonely and disappointed (Murphy 2002; Murphy 2004). Moreover, migrants do not always make enough money to send home significant amounts. It is common for employers to withhold wages for weeks or even months and, of course, migrants may suffer periods of unemployment or be forced out of the workforce by illness or injury (Pai 2012).

## 8.6 Migration, Equality and Inequality

### *8.6.1 Women's Empowerment*

Women tend to migrate when they are in their late teens or early twenties and return to their villages in their mid or late twenties to marry and have children. Young unmarried women in the rural areas normally live with their parents and are subject to their authority. When they migrate they experience life away from home for the first time. They also put a distance between themselves and the authority of their parents. Like their male counterparts, they have to submit to the discipline of the workplace, but when they have time off they can live as they wish. Equally, although women usually remit generously to their families, they receive their wages into their own hands and can decide what to do with it: they buy clothes and consumer goods for the pleasure they get from their purchases; they quickly acquire mobile phones and use them not only to ring home, but also to maintain friendships with workmates and others whom they meet on their sojourn in the cities (Chang 2008). They move from job to job without consulting their parents who would not have the knowledge to offer advice (Pai 2012). With no doubt, urban migration offers new alternatives to young migrant women and allows them to raise their self-confidence (Jacka 2006; Chang 2008; Bossen 2011).

Many of these young women go back to the rural areas to marry and have children. Their return to rural patriarchal structures cannot be easy, especially as it often coincides with leaving their home villages to live in their husbands' villages. Nonetheless, migration gives young women the experience of independent living, handling their own money and organizing their own social lives. On their return to the villages they have more experience of the outside world than most of the older people. They tend to marry somewhat later and have children later than their rural peers. It is thus likely that they will claim higher status within their families than previous generations were able to do (Murphy 2004).

After marriage, as we have seen, women are more likely than their husbands to remain in the villages, and this may contribute, to some extent, to their empowerment. The left-behind wives must take care of the house and children, and often continue to cultivate the family plot to reap the meagre resources it provides. However, this has some positive returns. Where men leave the countryside for the city, women assume a stronger economic role, with a potential increase in their autonomy and bargaining power. In particular, the increasing involvement of the younger wives in income-generating labour and their day-to-day control of the household give them agency and confidence to oppose gender inequality (Huang 2011; Murphy 2004).

### *8.6.2 Migration and Rural–Urban Inequalities*

Rural–urban inequality was a characteristic of Maoist China and has continued and increased since the economic reforms. There is little evidence that migration, sometimes put forward as a solution to this inequality, has in fact reduced it. Some migrants, probably mainly those from provincial towns rather than from rural areas, have made fortunes from trading or other businesses in urban areas (Zhang 2001). These are only a tiny minority of the hundreds of millions of migrants enumerated in the census, however. The vast majority will earn a bit more as migrants than they would have done in their villages, but far less than urban residents. For example, a survey in Jiangsu in 2004 found that 31% of local workers earned 15,000 yuan or more against only 3.6% of those with a non-Jiangsu *hukou*; 25% of outside workers had an income of under 5,000 yuan compared to only 14% of local workers (Bramall 2008). The *hukou* system, discrimination, and human capital factors such as lack of education, skills and contacts all contribute to this inequality. The *hukou* system also excludes migrants from the welfare, health and educational entitlements of urban residents. In larger cities in China in 2005, only 9% of migrants had pension insurance compared to 77% of urban residents, and while 64% of urban residents had health insurance only 8% of migrants did (Bramall 2008). Mass migration has thus brought about a two-tier labour force in the urban areas and has contributed to new forms of inequality between people of rural and urban origin.

The impact of migration on the prosperity of rural areas is also complex. As we have seen, remittances have improved standards of living in the villages and have made new forms of consumption possible. Some returned migrants have brought savings home and invested them in small businesses, thus contributing to the long-term growth of their village economies. On the other hand, Chinese migration has taken a significant proportion of the young labour force away from the villages and, like migration elsewhere, draws away the best-educated and most enterprising people. This must threaten the development prospects of poor remote areas that fail to attract return migration. Other areas, better endowed by nature and close to markets, will be more attractive to returnees. The savings of returned migrants and migrant remittances can be used to set up new small businesses and industries and

to develop more productive, less labour-intensive agriculture. Clearly, while the nature of rural-urban inequalities will be changed by migration, these inequalities will certainly persist for a long time to come.

## Conclusion

Rural-to-urban migration is one of the most important aspects of contemporary demographic change in China. As the 2010 census shows clearly, it has involved the movement of hundreds of millions of Chinese. As migration attracts predominantly young people, it has had a considerable effect on the age structure of the population in both urban and rural areas. The rural areas have a disproportionate share of the old and the very young, while the urban areas have more than their share of people of working age. Due largely to rural-to-urban migration, the urban population now outnumbers the rural population in China, and everything suggests that these trends will continue. The rural-urban earnings gap and the disparities between regions continue to make migration attractive to young people in the rural areas. Moreover, government policy on migration has switched from ambivalence to positive encouragement, with a recently announced target of increasing urbanization to 60% by 2020 (Hasija 2013).

The census shows that most migrants move for work and trade, education and training, family reunification and marriage. The first of these reasons obviously embraces economic migrants, but it is likely that most migrants who give other reasons for migration are also trying to improve their economic situation. It is ironic, therefore, that barriers to the upward mobility of migrants, primarily the *hukou* system but also existing inequalities in human capital (education, skills, experience and contacts) make it very difficult for migrant workers from the countryside to attain anything like the living standards of urban residents. Poor levels of integration, and in particular the exclusion of many migrant children from good quality education, mean that even second-generation rural migrants brought up in the cities are likely to inherit their parents' low status. In a sense, migration, far from solving the problem of urban-rural inequality, has merely given it a new form. According to recent official commentaries, 53% of the Chinese population now live in the urban areas but only 35% hold an urban *hukou* with its attendant entitlements. The Chinese premier, Li Keqiang, has associated himself with calls for the gradual resolution of this inequitable anomaly but it is not clear when this will be done, or how the costs will be met (Reuters 2013).

Migration has had considerable consequences for society and families, both urban and rural. Overall, migration has helped to alleviate rural poverty, as rural labourers move to the urban areas, earn more and send remittances home (Chan 2013). However, when the proportion of the youthful workforce who leave is too high, some villages may remain trapped in poverty and unable to develop.

Difficulty in accessing good accommodation, healthcare and education means that many migrants return to their villages or, in many cases, to towns close to their

original homes when they marry or have their first child. Few make a once-and-for-all decision; rather, their comings and goings between cities, towns and villages are influenced by their age, marital status, parenthood and the balance between their need for an urban wage and the need for their labour in the village.

The mobile lives migrants are forced to live are not conducive to stable family relations. Husbands and wives, separated for long periods by work, may not get on when they start living together again. Old people in the rural areas struggle to manage without the help of their adult children, especially if they are burdened with the care of their grandchildren. Millions of children with migrant parents are growing up separated from one or both of their parents, or sharing highly unsatisfactory living conditions with them in the urban areas. Women, whether as migrants, or as wives left behind in the villages, are likely to develop more independence and confidence in the age of mass migration. On the other hand they suffer from overwork, loneliness and relationships under stress from long separations.

In sum, the social impacts of migration on the enormous scale reflected in China's 2010 census are a complex mix of the positive and negative. The lives and experiences of migrants vary greatly, depending on interdependent factors such as their gender, age, employment, accommodation, pay and conditions, their networks … and their luck. In this, migration and urbanization in China are not so different from migration and urbanization elsewhere, which historically have led to growth and higher standards of living but have also resulted in enormous individual suffering. Special factors in China have been the scale and pace of demographic change and the discriminatory effects of the *hukou* system. Despite the extensive discourse on *hukou* reform and apparent central government support for its gradual abolition, the *hukou* system seems for now to be simply in a process of reform, with its details and implementation allowed to vary by locality. As this chapter has shown, it even shapes the form in which census data are presented. It seems likely that this will still be the case at the time of the next census in 2020.

## References

Attané, I. (2013). *The demographic masculinization of China: Hoping for a son*. Dordrecht: Springer.

Banister, J. (2009). Poverty progress and rising life expectancy. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 140–159). Oxford: Oxford University Press.

Bossen, L. (2011). Reproduction and real property in rural China: Three decades of development and discrimination. In T. Jacka & S. Sargeson (Eds.), *Women, gender and rural development in China* (pp. 97–123). Cheltenham: Edward Elgar Publishing Limited.

Bramall, C. (2008). *Chinese economic development*. London: Routledge.

Cai, Y., & Lavely, W. (2003) China's missing girls: Numerical estimates and effects on population growth. *The China Review, 3*(2), 1–17.

Cai, Y., & Lavely, W. (2007). Child sex ratios and their regional variation. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 1–17). Oxford: Oxford University Press.

Chan, C. K. C., & Pun, N. (2009). The making of a new working class? A study of collective actions of migrant workers in South China. *The China Quarterly, 198,* 287–303.
Chan, K. W. (2013). China, internal migration. In I. Ness & P. Bellwood (Eds.), *The Encyclopedia of global migration*. Oxford: Blackwell Publishing.
Chan, K. W., & Zhang, L. (1999). The hukou system and rural–urban migration in China: Processes and changes. *The China Quarterly, 160,* 818–854.
Chan, K. W., & Buckingham, W. (2008). Is China abolishing the hukou system? *The China Quarterly, 195,* 582–606.
Chang, L. T. (2008). *Factory girls: Voices from the heart of modern China*. London: Picador.
Cheng, T., & Selden, M. (1999). The origins and social consequences of China's hukou system. *The China Quarterly, 139,* 644–668.
CLB. (2009). Paying the price for economic development: The children of migrant workers in China. China Labour Bulletin, Special Report, 26 Nov. Available at http://www.clb.org.hk/en/files/share/File/research_reports/Children_of_Migrant_Workers.pdf. Accessed 3 Aug 2013.
CLB. (2013). Migrant workers and their children. China Labour Bulletin 27 Jun 2013. Available at http://www.clb.org.hk/en/content/migrant-workers-and-their-children. Accessed 8 Sept 2013.
Davies, G., & Grant, S. (2008). Righting wrongs: The Language of policy reform and China's migrant workers. In I. Nielsen & R. Smyth (Eds.), *Migration and social protection in China* (pp. 31–48). New Jersey: World Scientific.
Davin, D. (1999). *Internal migration in contemporary China*. Basingstoke: Macmillan.
Davin, D. (2008). Marriage migration in China: The Enlargement of marriage markets in the era of market reforms. In R. Palriwala & P. Uberoi (Eds.), *Marriage, migration and gender* (pp. 63–77). New Delhi: Sage Publications.
Fan, C. (2008). China on the move: Migration, the state and the household. London: Routledge.
Fitzgerald, S., Xin, C., Hui, Q., & Sheff, M. G. (2013). Occupational injury among migrant workers in China: A systematic review. *Injury prevention, 19*(5), 348–354.
Hasija, N. (2013). China: New urbanisation plans—analysis. Eurasia Review. Available at: http://www.eurasiareview.com/09092013-china-new-urbanisation-plans-analysis/. Accessed 12 Sept 2013.
Huang, Y. (2011). Labour, leisure, gender and generation: the organization of 'wan' and the notion of 'gender equality' in contemporary rural China. In T. Jacka & S. Sargeson (Eds.), *Women, gender and rural development in China* (pp. 49–70). Cheltenham: Edward Elgar Publishing Limited.
Jacka, T. (2006). *Rural women in urban China: Gender, migration and social change*. Armonk: M.E. Sharpe.
Knight, J., & Yueh, L. (2004). Job mobility of residents and migrants in urban China. *Journal of Comparative Economics, 32*(4), 637–660.
Lavely, W. (1991). Marriage and mobility under rural collectivisation. In R. S. Watson & P. Ebrey (Eds.), *Marriage and inequality in Chinese society* (pp. 286–312). Berkeley: University of California Press.
Lee, K. C. (2007). *Against the law: Labor protest in China's Rustbelt and Sunbelt*. Berkeley: California University Press.
Li, C. (2013). Institutional and non-institutional paths: Migrants and non-migrants' different processes of socioeconomic status attainment in China. In P. Li & L. Roulleau-Berger (Eds.), *China's internal and international migration* (pp. 26–39). London: Routledge.
Liang, Z. (2007). Internal migration: Policy changes, recent trends, and new challenges. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 197–215). Oxford: Oxford University Press.
Liu, S. V. (2007). "Social positions": Neighbourhood transitions after danwei. In C. K. Lee (Ed.), *Working in China: Ethnographies of labor and workplace transformation* (pp. 38–55). London: Routledge.
Lu, W. (2006). The urban Chinese educational system and the marginality of migrant children. In V. Fong & R. Murphy (Eds.), *Chinese citizenship: Views from the margins* (pp. 27–40). London: Routledge.

Murphy, R. (2002). *How migrant labor is changing China*. Cambridge: Cambridge University Press.

Murphy, R. (2004). The impact of labor migration on the well-being and agency of rural Chinese women: Cultural and economic contexts and the life course. In A. M. Gaetano & T. Jacka (Eds.), *On the move: Women and rural-to-urban migration in contemporary China* (pp. 243–276). New York: Columbia University Press.

Pai, H.-H. (2012). *Scattered sand: The story of China's rural migrants*. London: Verso.

PCO (Population Census Office). (1993). . *Zhongguo 1990 nian renkou pucha ziliao (Tabulation of the 1990 Population Census of the People's Republic of China)*. Beijing: China Statistics Press.

PCO (Population Census Office). (2002). *Zhongguo 2000 nian renkou pucha ziliao (Tabulation of the 2000 Population Census of the People's Republic of China)*. Beijing: Statistics Press.

PCO (Population Census Office). (2012). *Zhongguo 2010 nian renkou pucha ziliao (Tabulation of the 2010 Population Census of the People's Republic of China)*. Beijing: Statistics Press.

Pun, N. (2005). *Made in China: Women factory workers in a global workplace*. Durham: Duke University Press.

Reuters. (2013). China premier calls for 'human focus' to urbanisation plan. Available at: http://uk.reuters.com/article/2013/09/08/uk-china-economy-urbanisation-idUKBRE98702M20130908. Accessed 13 Sept 2013.

Shi, X. (2010). Women, international migration and development: Chinese women's migration to Southeast Asia since 1978. *International Journal of China Studies, 1*(1), 216–229.

Solinger, D. (1999). *Contesting citizenship in urban China: Peasant migrants, the state and the logic of the market*. Berkeley: University of California Press.

Song, L., & Appleton, S. (2008). Social protection and migration in China: What can protect migrants from economic uncertainty? IZA Discussion papers 3594, Institute for the Study of Labor (IZA).

Tan, L., & Gilmartin, C. (2001). Fleeing poverty: rural women, expanding marriage markets and strategies for social mobility in contemporary China. In E. Ngan-Ling Chow (Eds.), *Transforming gender and development in East Asia* (pp. 203–216). New York: Routledge.

Wang, F. (2010). Conflict, resistance and the transformation of the hukou system. In E. J. Perry & M. Selden (Eds.), *Chinese society, change, conflict and resistance* (pp. 80–100) (Third edition only). London: Routledge.

Wang, F., & Mason, A. (2009). Population aging: Challenges, opportunities, and institutions. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 160–176). Oxford: Oxford University Press.

Yan, Y. (2003). *Private life under socialism: Love intimacy and family change in a Chinese village 1949–1999*. Stanford: Stanford University Press.

Ye, J., Murray, J., & Wang, Y. (Eds.), (2011). *Beijingshi, Hebei, Ningxia, Shaanxi, ten villages (Impact Study on Left-Behind children in Midwest China)*. Social Sciences Academic Press: Paths International.

Zhang, L. (2001). *Strangers in the city: Reconfiguration of space, power, and social networks with China's floating population*. Stanford: Stanford University Press.

# Chapter 9
# China's Urbanization: A New "Leap Forward"?

**Guixin Wang**

## 9.1 Introduction

In parallel to the reform and opening-up policy launched in 1978, which led to annual economic growth close to 10%, China's population has become increasingly urbanized. At present, China's GDP ranks second in the world, and per capita GNI has entered the levels of upper-middle-income countries. In 2012, 52.6% of the population was living in urban areas, a percentage comparable to the world average. It is worth noting that although urbanization has played an important role in promoting sustained economic growth, the quality of urban development is not high (Xu 2013). There are substantial problems not only in the urbanization process itself, but also in the places where urbanization takes place and the way it is enforced and experimented, with various negative impacts on population and environment.

This chapter focuses on the development and characteristics of China's urbanization, and related problems that have emerged since the reform and opening-up policy. It then explores the negative impacts of the promotion of this rapid urbanization on social development in cities, and on the ecological environment.

## 9.2 The Main Features of China's Urbanization

The first characteristic of China's urbanization is that it started from an extremely low level in the mid-twentieth century, and then exhibited a steady upward trend from the 1980s. After the founding of the People's Republic of China in 1949, the introduction of the planned economy and the household registration system led to segmentation between urban and rural areas, and hence between urban and rural populations. Due to strict control of rural-to-urban migration (See Inset 4.1, p. 66) the share of total population living in urban areas with urban status remained low

G. Wang (✉)
Fudan University, Shanghai, China
e-mail: wanggx@fudan.edu.cn

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_9, 

during the following three decades. In 1949 at the founding of the People Republic of China, the percentage urban was 10.6%, much lower than the world average at that time, which stood at around 30%. Urbanization remained modest until after Deng Xiaoping's economic reforms (in 1978, urban residents still accounted for only 17.9% of the total Chinese population), which led to a gradual easing of restrictions on internal migration.

From the late 1970s, China undertook a series of economic reforms, among which the introduction of the market economy. Due to the institutionalized dichotomy between urban and rural populations and their different socioeconomic contexts, distinct objectives prevailed and different policies were implemented. In rural areas, the reforms first affected the collectivist organization of agriculture within the people's communes, which were abolished and replaced by a new land contract giving more autonomy to peasants through the household responsibility system (Attané 2002). In urban areas, policies focused on rapid urban construction and economic growth through the development of a productive and competitive business environment and labour force.

### *9.2.1 Urbanization Trends*

Starting with the economic reforms, de facto control of people's mobility eased. Internal migration, especially from rural to urban areas, greatly boosted urban dynamics and the urban workforce. From then on, the percentage urban increased rapidly to reach 36.2% in 2000, twice the 1978 level. In the following decade, the increase was even more spectacular, reaching 52.6% in 2012 (Fig. 9.1). It is also noticeable that the speed of urbanization is accelerating, from an annual average rate of +3.09% in 1980–1990, to 3.16% in 1990–2000 and then +3.21% annually in 2000–2010.

There was thus a rapid increase in the absolute numbers of urban residents. As shown in Fig. 9.1, China's urban population in 1978 was only 172.45 million. In 1990, it had reached 301.95 million, an increase of 75% in 12 years, representing average annual growth of about 10.79 million. In 2010 it stood at 669.78 million people, an increase of 46% compared to 2000 (459.06 million), or plus 21.7 million annually on average. For the first time in China's history, urban residents now outnumber their rural counterparts.

Generally speaking, there are three major factors generating urban population growth: first, natural population growth (i.e. the difference between births and deaths); second, growth due to migration; third, a significant driver in China is the redefinition of the administrative status of localities, artificially transforming rural residents into urban ones, with no change in their actual place of residence. According to estimates, in 1991, urban population growth in China was mainly driven by this third factor, followed by natural growth, and last, migration, and these three causes accounted for 41.9%, 33.4%, and 24.7%, respectively, of urban population growth (Wang 2008). Later on, the influence of migration increased, and in 1996 it

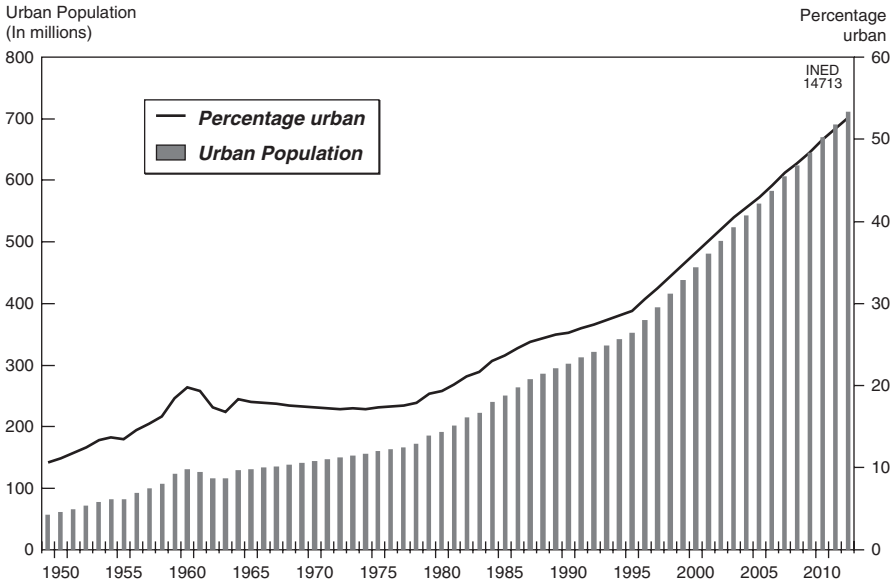



**Fig. 9.1** Development of China's urban population (1949–2012) (% urban) (Source: NBS 2012a)

accounted for 41.3 % of growth, supplanting growth led by the change in administrative definition of localities (39.1 %). In 2010, 73 % of annual urban population growth was due to rural-to-urban migration. Indeed, since the mid-1990s, rural-to-urban migration has been the strongest driver of urbanization, although natural increase is still quite strong in the urban population, at 4.19 per 1,000 in 2010, versus 5.35 per 1,000 in the countryside.

### *9.2.2 A Process of "Semi-Urbanization"*

Due to institutional constraints, in particular the rigid household registration system, urbanization driven by population migration is not an entirely satisfactory option. It should be considered as a form of "semi-urbanization" involving a "two-stage" development model (Wang et al. 2008; Xiong 2012). The first stage is one of "centralization": rural residents move from the countryside to cities and then engage in urban life, working as permanent residents and therefore changing from farmers into urban workers. However, even when these migrant workers have been living and working in cities for a long time, and are sometimes considered as urban residents in statistics, their living conditions are still very different from those of registered urban residents. Constrained by the household registration system, most rural migrants in cities cannot obtain urban household registration, nor benefit from the welfare system associated with urban registration. They are therefore caught in a process of "superficial" urbanization.

The second stage is that of "citizenization", in which the same rights as those enjoyed by urban residents are granted to rural migrant workers and the family members living with them. But in China's context, this process calls for sustained — and often unfruitful — efforts on the part of migrant workers, who have to work very hard to be treated on an equal footing with their urban counterparts in terms of employment, health care, social security, and education for their children (Solinger 1999). This transformation of rural migrant workers into rightful urban residents, i.e. their "citizenization", is a necessary process to achieve a "complete" form of urbanization that is worthy of its name. According to the 2010 census data, there are a total of 200 million migrants nationwide, of whom 140 million have been living in a city or a town for more than 6 months with non-local household registration status. Among these migrants, 140 million are rural migrant workers, and when their children are added, the total number is about 160 million. These millions of rural migrants therefore feed a "semi-urbanization" process, and their marginalization in cities is an obstacle to a complete and successful urbanization process.

### *9.2.3 A Concentration of Urbanization in Coastal Areas*

Another feature of Chinese urbanization is its geographical imbalance, the eastern coastal regions having higher proportions of urban dwellers than most of the central and western provinces. This uneven distribution of the urban population is both the cause and the consequence of natural environmental conditions, levels of economic development and cultural and historical contexts, which vary considerably between regions (Fig. 9.2). The most hospitable regions both in terms of location and natural environment, and with a good level of economic development, i.e. eastern coastal areas, have higher levels of urbanization. This is a long-standing trend confirmed by the 2010 census. Conversely, regions with fewer comparative advantages, i.e. central and western parts of the country, are much less urbanized. For instance, the percentage urban in Beijing, Tianjin and Shanghai, which are the most economically developed regions, exceeds 70 %, reaching almost 90 % (89.3 %) in Shanghai. Then come Jiangsu, Zhejiang, Guangdong, and Liaoning, where levels are also above 60 %, while in central and western regions, like Shanxi, Anhui, Jiangxi, Hubei, Hunan, Shaanxi, Ningxia, Qinghai, Xinjiang and Sichuan, they are below 40 %. The lowest level of population urbanization is observed in Tibet, with less than 30 % of its population living in urban areas (Table 9.1).

As a key driver of the phenomenon, migration shows a strong correlation with urbanization, and thus displays similar regional characteristics. In Beijing, Tianjin, Shanghai, Guangdong, and Zhejiang, the number of net migrants is not only large, but migration is also largely dominated by inter-provincial flows. Cities in Jiangsu and Fujian provinces have equivalent levels of intra- and inter-provincial migration. Apart from Xinjiang province, migration elsewhere is mainly intra-provincial. This indicates that most of the urbanization in central and western provinces is due to rural-to-urban migration within the provinces, while in Beijing, Tianjin, Shanghai, and in the eastern coastal provinces of Guangdong and Zhejiang, migration is primarily inter-provincial.

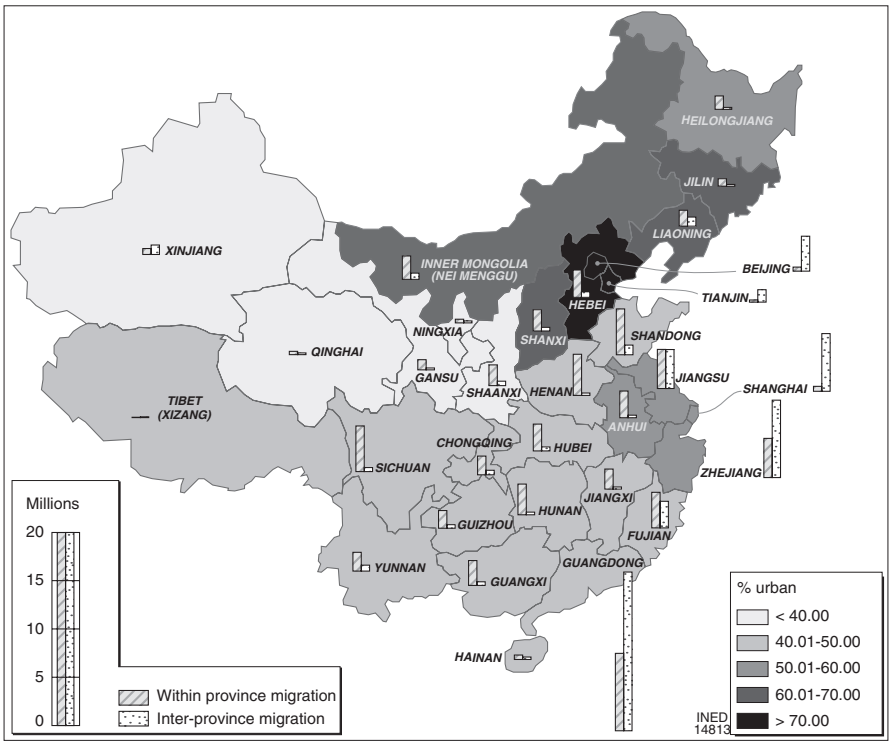



**Fig 9.2** China population urbanization levels in 2010 (% urban) and internal migration (Source: PCO 2012)

### *9.2.4 Urbanization and Economic Development*

Together with the increase in the size and the number of cities, the overall level of economic development is forecast to increase. Labour migration to cities has had significant and immediate effects on productivity and therefore on China's economy and urbanization. But rural-to-urban mass migration not only contributes to China's urbanization, it also moves rural populations from low-productivity (agriculture) to high-productivity (industry) sectors. This has significantly increased the overall productivity level (Wang and Shen 2010) in the post-reform period, and stimulated local economic development. It has not only resolved the structural problem of labour force surpluses in rural areas but has also satisfied the increasing demand for labour in industrializing urban areas and contributed strongly to urban construction and rapid economic development. According to Cai and Wang (1999), rural workers who migrated to cities accounted for 21 % of total China's GDP growth between 1978 and 1998. Wang et al. (2005) also found that population migration had a significant accelerating effect on China's economic growth. Between 1982 and 2000, each additional 10,000 people migrating from one province to another contributed

**Table 9.1** The ten most populated cities in China

| City | 1990 | | 2000 | | 2010 | | Growth rate (%) | |
|---|---|---|---|---|---|---|---|---|
| | Population in city area (thousands) | Ranking | Population in city area (thousands) | Ranking | Population in city area (thousands) | Ranking | 1990–2000 | 2000–2010 |
| Chongqing | 2,984.4 | 7 | 8,964.9 | 3 | 15,427.7 | 1 | 200.39 | 72.09 |
| Shanghai | 7,834.8 | 1 | 11,368.2 | 1 | 13,316.8 | 2 | 45.10 | 17.14 |
| Beijing | 6,995.1 | 2 | 9,741.4 | 2 | 11,746.3 | 3 | 39.26 | 20.58 |
| Tianjin | 5,770.1 | 3 | 6,820.5 | 5 | 8,029 | 4 | 18.20 | 17.72 |
| Guangzhou | 3,579.4 | 6 | 5,666.8 | 6 | 6,546.8 | 5 | 58.32 | 15.53 |
| Xian | 2,756.7 | 10 | 3,934.7 | 8 | 5,615.8 | 6 | 42.73 | 42.72 |
| Nanjing | 2,497.5 | 11 | 2,895.2 | 12 | 5,459.7 | 7 | 15.92 | 88.58 |
| Chengdu | 2,808.1 | 9 | 3,358.6 | 9 | 5,208.6 | 8 | 19.60 | 55.08 |
| Wuhan | 3,750.5 | 5 | 7,491.9 | 4 | 5,149.7 | 9 | 99.76 | −31.26 |
| Shenyang | 4,538.7 | 4 | 4,850.4 | 7 | 5,122.3 | 10 | 6.87 | 5.61 |

Source: NBS 2011

to GDP by 10 billion RMB, primarily due to the labour force shift from agricultural to rural industrial sectors. Each additional 0.1 % increase in the inter-provincial migration rate had an immediate effect on economic growth, increasing GDP growth by 1.3 trillion RMB, and per capita GDP growth by 1,000 RMB (Wang et al. 2005). At the turn of the twenty-first century, the urbanization process and its hundreds of millions of rural-to-urban migrants have become an essential driver of China's economic growth (Wang et al. 2013).

## 9.3 Urban Expansion and Social Development

As explained above, the high-speed urbanization that has characterized China from the 1980s has also brought various problems in its wake, among which the impact of urbanization on urban and social development, and on the ecological environment.

### *9.3.1 The Expansion of Urban Land Cover*

The expansion of urban land cover is the inevitable but somewhat necessary result of urbanization. In the urbanization process, cities become centres for human activities, and especially economic activities. Since life in cities involves intensive use of land, resources and energy, the spatial concentration of the population allows some economies of scale. However, population urbanization may also have negative effects on urban development.

In the early 1980s, China implemented a strategy that involved "strictly controlling the development of large cities, moderately developing medium-sized cities,

and actively developing the small cities (towns)" (SCC 1980). In line with this strategy, the government put great emphasis on the development of small towns by creating a number of rural enterprises. Their objective was to absorb the rural workforce transferred from agricultural farming, and thereby to limit their migration to large cities. Nowadays, megacities such as Shanghai and Beijing still regulate migration to strictly control their population growth. Besides the megacities, local governments at all levels have implemented urbanization plans to develop small towns and cities, but they do not permit the economies of scale that characterize large cities, and are liable to decrease the overall benefits of urbanization.

Also, urbanization based on the expansion of urban territories to the detriment of arable land not only reduces economies of scale, but also results in a significant waste of land resources. By its very nature, migration from rural areas to cities increases the size of urban populations, and also leads to an expansion of city land cover. In other words, population urbanization drives land urbanization. However, the speed of land urbanization has been much faster than that of population urbanization since the 1980s. Recent urban development in China can be divided into two phases, roughly before and after 1996. Before 1996, urbanization was driven more by the increasing number of rural localities re-qualified as urban than by the expansion of urban areas per se. But after 1996, the situation reversed and urbanization was mainly driven by the expansion of urban areas (Xue et al. 2013). Especially during the first decade of the twenty-first century, land urbanization increased significantly, in parallel to rapid population urbanization. The number of permanent residents in cities and towns increased by 45.9% between 1991 and 2010, but urban land cover increased by 78.5%. As a result, the average population density of urban areas was significantly diluted, and this decreased the intensiveness and effectiveness of cities, with a severe waste of land resources as a result. In Beijing, for instance, despite the very high land prices, a total of 58 million square feet of land remain unused, i.e. with no ongoing construction project — equivalent to 80 times the size of the Forbidden City (Wang 2013).

China's urbanization process is sometimes called the new "Great Leap Forward", as it is considered to be the most important pillar for economic development, sustained growth and overall modernization (Chan and Zhang 1999). But a contradiction in this process is the considerable waste of land, while most of the urban population is concentrated in high-density areas. Thus, along with urban expansion, high-density and low-density areas co-exist in large cities, making the urban spatial structure irrational, and causing dissatisfaction in the most densely populated areas, in particular because of inappropriate urban spatial structure and serious traffic congestion. For example, Beijing, has been dubbed the "capital of traffic jams", because the average rush-hour speed on its main roads slowed from 40 km/h in 1998 to 20 km/h in 2009. Moreover, periods of traffic congestion have increased from 3.5 h/day in 2008 to as much as 5 h at the present (Zhou 2010). Shanghai, China's largest city, is in a similar situation, with severe congestion on almost 50% of its inner-city roads during rush hours.

There are many contradictions in China's immoderate urbanization. Although the local governments should officially give priority to the development of towns

and medium- and small-sized cities, they often allocate most public resources to the large cities. Generally speaking, the larger the city the larger the economy of scale, and the higher the city administration level, the greater its power and level of priority in government allocation of public resources. Additionally, with the development of the market economy, large cities are becoming more and more attractive, with much greater potential for economic development than smaller ones, so there is a polarization of both human and economic activities in larger cities. Also, the market economy has introduced de facto competition between the large cities, which want to attract as much wealth as they can, as the local governments are eager to obtain significant growth of short-term local GDP. The cities thus receive an increasing share of public resources in order to make them more attractive, so the number of permanent residents keeps increasing, despite strict policies to control in-migration.

### *9.3.2 Urbanization and Social Segregation*

As a driving force for economic and social development, population urbanization has made an outstanding contribution to the high-speed economic growth and social development of China since the reforms and opening-up were launched in 1978. However, it has also raised some serious social issues. As explained above, "semi-urbanization", which is currently the dominant form of population urbanization in China, has triggered serious social problems such as socioeconomic inequality and separation of family members. Semi-urbanization is also called "separating urbanization"[1] because hundreds of millions of rural people work and live in cities but still have their household registration in the countryside, and are therefore obliged to migrate without their spouse and children (Xiong 2012).

First of all, the inconsistency between registered and actual residence in the semi-urbanization process creates huge vulnerable groups of rural workers in cities. Although they have contributed strongly to economic and urban development through an abundant supply of labour, they cannot get urban household registration or enjoy the associated welfare benefits, such as social security, to which urban residents are entitled. Most rural workers live in "City Villages" in distant suburbs and are engaged in "3K"[2] jobs, with unequal wages, job insecurity, and low income. They also face social injustice, due to the vulnerability and the instability of their living conditions. The dichotomization based on the household registration system marginalizes rural workers and keeps them at the bottom of society. Another important point is that semi-urbanization also separates a large number of families. Some 60 million children, 47 million wives and 40 million older adults are left behind in rural areas, forming a huge population of vulnerable groups, totalling as many as 150 million (Lan 2010). Left-behind women often suffer from loneliness and

[1] Also called "incomplete" urbanization or "shallow" urbanization.

[2] "3K" refers to dirty, tiresome and dangerous jobs, the "K" corresponding, in Japanese language, to *kitanai* (dirty), *kitsui* (tiresome) and *kikenn* (dangerous).

fear; they are required to take care of children and the elderly, to farm the land and support the family. While left-behind children get little parental love and usually abandon school at a very early age, left-behind older adults often live by themselves and receive little family care. In short, these vulnerable rural populations live in an extremely fragile and unstable environment. With the constant widening of the urban-rural income gap and the progressive decline of the rural economy, their lives are becoming more and more harsh. Yet through their remittances, migrants make a significant contribution to agricultural investment and rural local development (Li et al. 2008).

The government strategy that consists in making cities the most important centres of economic development, to the detriment of rural areas, creates a widening gap between the two, and leads to intensification of social conflicts. Sustainable urbanization calls for balanced and coordinated development in both urban and rural areas, ensuring that the entire population shares the benefits of urbanization. But that is not currently the case in China. Because government policies put a premium on urban areas, the rural economy is weakening. The transfer of capital and young workers from rural to urban areas is resulting in a shortage of funds for agricultural production, and a significant proportion of the workers who remain behind are either old, sick or disabled (Wang et al. 2008). Additionally, the government is not paying enough attention to the development of agriculture, so extensive farming methods remain in place, labour productivity is low, and large amounts of land remain uncultivated or totally abandoned.

The situation of education in rural areas is also deteriorating. The number of primary schools halved between 2000 and 2010, from 550,000 down to 260,000, i.e. an average daily disappearance of 56 rural primary schools, and the number of junior high schools fell from 64,000 to 55,000 (Lei 2012). The dwindling number of rural schools seriously affects local children's chance of receiving the 9 years of compulsory education, limits development capacity and weakens the foundations for sustainable development of rural areas. Furthermore, the urban/rural imbalance in development is increasing disparities, income disparities especially. In the early 1980s, the Gini coefficient which measures the income gap was 0.33, but has increased to 0.5 or even 0.6 today according to some experts (Wang 2012). The increasing income gap has led to sharpening contradictions and to frequent unrest. According to news media reports, "mass incidents" are frequent and the cost of maintaining stability is increasing markedly. Official figures indicate that the national expenditures for public security in 2012 reached 701.76 billion Chinese yuan, well above the budget allocated to defence (670.27 billion Chinese yuan). In short, China faces the threat of increasing social instability while entering the "middle-income trap" (World Bank 2006).

## 9.4 A Deteriorating Ecological Environment

Another challenge posed by urbanization concerns the ecological environment. Essentially, the control of carbon emissions will benefit from the development of urbanization, and the reduction effect is proportional to the city scale (Wang and Wu 2012). The accelerated population urbanization following the economic reforms has alleviated the pressure of carbon emissions to some extent: as urban areas rely more on public transport, walking and cycling, carbon dioxide emissions from transport are likely to be greater in less densely populated areas (OECD 2013). But solid waste and emissions due to road traffic and industrial activity increase the pressure on the ecological environment. In Shanghai, for instance, fast population growth (the resident population totalled 11.86 million people in 1982, and rapidly increased to 16.4 million in 2000 and then to 23.0 million in 2010) has clearly aggravated environmental pollution due to human and industrial activities. The correlation coefficient between population size and industrial gas and waste emissions has reached almost 0.9, an extremely high level (Wang 2008). The situation is similar in Beijing, where population growth has also led to a significant increase in pollutant emissions: for instance, the increase in carbon emissions in Beijing between 2011 and 2012 was almost equal to the gross carbon emissions of a middle-to-small size city. The environmental situation is also very critical in other cities. In 2013, fewer than 1 % of the 640 cities had air quality that complied with the national standard reference. The worst ten cities (i.e. Taiyuan, Beijing, Urumqi, Lanzhou, Chongqing, Jinan, Shijiazhuang, Qingdao, Guangzhou, Shenyang) are all in the list of the world's 20 most polluted cities. Moreover, due to industrial development, the number of private cars has increased, and China has become one of the countries with the most serious air pollution: all Chinese cities have a concentration of suspended particles well above the WHO standard of 20 μg/m$^3$, and only 1 % of China's urban residents live below the level of 40 μg, twice the WHO standard.[3]

Table 9.2 shows the close relationship between population urbanization and environmental pollution in China. Since 2000, the correlation coefficients between urban population, percentage urban and the indicators of city pollution (i.e. quantity of solid waste, sewage discharge, and emissions of industrial waste gases) have remained above 0.85. In particular, the urban population size and urbanization levels logically have a strong influence on the quantity of urban sewage discharge and industrial emissions. Every 10 million increase in urban population increases urban sewage discharge and industrial waste gas emissions by 900 million t and 2.0993 trillion m$^3$, respectively; and for each percentage point of increase in the level of urbanization, urban sewage discharge and industrial waste gas emissions increase, respectively, by 1300 million t and 32,314 million/m$^3$ respectively.

In Chinese cities, human and economic activities are mainly concentrated in central districts, which often turn into heat islands where temperatures are a few

[3] "Huiguo qian wan yao dai kouzhao guoban chengshi kong wu yu shi wei biaozhun 5 bei". *China Gate*. 13 Jan. Available at http://www.wenxuecity.com/news/2013/01/13/2174990.html. Accessed 17 October 2013.

**Table 9.2** Relationship between urbanization and environmental pollution (2000–2011)

| Year | City population ($10^4$ persons) | Percentage urban (%) | Quantity of municipal solid waste ($10^4$ t) | Amount of sewage discharge ($10^4$ t) | Emission of industrial waste gas (billion $m^3$) |
|---|---|---|---|---|---|
| 2000 | 45,906 | 36.22 | 11,819 | 220.9 | 138,145 |
| 2001 | 48,064 | 37.66 | 13,470 | 227.7 | 160,863 |
| 2002 | 50,212 | 39.09 | 13,650 | 232.3 | 175,257 |
| 2003 | 52,376 | 40.53 | 14,857 | 247.6 | 198,906 |
| 2004 | 54,283 | 41.76 | 15,509 | 261.3 | 237,696 |
| 2005 | 56,212 | 42.99 | 15,577 | 281.4 | 268,988 |
| 2006 | 58,288 | 44.34 | 14,841 | 296.6 | 330,992 |
| 2007 | 60,633 | 45.89 | 15,215 | 310.2 | 388,169 |
| 2008 | 62,403 | 46.99 | 15,438 | 330.0 | 403,866 |
| 2009 | 64,512 | 48.34 | 15,734 | 355.2 | 436,064 |
| 2010 | 66,978 | 49.95 | 15,805 | 379.8 | 519,168 |
| 2011 | 69,079 | 51.27 | 16,395 | 427.9 | 674,509 |

Source: NBS 2012a, b

degrees higher than in the surrounding rural areas. Many case studies indicate that this phenomenon is closely related to human activities (Wang and Shen 2010). The development of cities has contributed strongly to this effect and made it worse. First of all, mass migration results in more emissions of heat from the human body and from human activity. Second, the concentration of economic activities has led to a concentration of the industrial fabric. With the expansion of non-agricultural industries, the artificial heat from production activities is far greater than the heat from human bodies. Third, spatial expansion has changed the type of land use and land allocation. To build larger cities able to support more population and economic activities, a great deal of agricultural land was reallocated and transformed into urban areas, resulting in less plant cover and fewer bodies of water. Anthropogenic heat is very limited in rural areas, but asphalt and cement, which are widely used in city buildings, make it much more intense in dense urban areas. So if migrants are concentrated in cities, this intensifies the agglomeration effect and aggravates the heat island effect. In Shanghai, for instance, the overall surface of built-up areas has expanded significantly with population urbanization. Between 1985 and 2005, the relationship between population urbanization and intensity of the heat island effect is linear, with a correlation coefficient ($r$) of 0.885 in 1985 and 0.931 in 2005. Results showed that heat island intensity will cause a temperature increase of 0.19° C for every one million population increase in a built-up area (Wang and Shen 2010).

Rapid urbanization exclusively focused on urban development has an impact on the entire ecosystem, both urban and rural. First, industrial infrastructure adjustment in urban areas has caused some enterprises to move to small cities or to the surrounding rural areas. But this causes pollution diffusion, leading to further deterioration in the overall ecological environment and increasing the difficulty of effective pollution management. For instance, there are a lot of chemical plants and economic development zones located along the Hangzhou Bay (Wang 2013). They continue to brazenly discharge wastewater into the Hangzhou Bay and the rural

river nearby, to the point that Hangzhou Bay is becoming a huge cesspit. Fog and haze in big cities have spread to the North China Plain, Huanghuai River Basin, Yantze and Huaiho valleys, Jianghan Plain, and also Northern South China, etc. In the first half of 2013, the areas affected by such pollution accounted for about one quarter of the whole national territory, and as many as 600 million people were exposed (Yuan 2013). Urbanization, as promoted in China, is leading to a series of significant changes. With the growing number of cities and the expansion of areas devoted to urban construction, the artificial environment is progressively replacing the natural environment in many places, and disrupting the balance of the entire natural ecological system. Additionally, inadequate focus on rural development is leading to further decay in the rural economic context and holding back rural construction and sustainable rural development. More importantly, it weakens the ecological function of the rural environment. For example, the preservation of rivers and wetlands is crucial to maintain the ecological balance, but their surface area has dramatically decreased in the past three decades. Official figures indicate that there used to be more than 50,000 rivers covering over 100 $km^2$ including their basin areas, but currently only 22,909 are left, a reduction of more than half; the Sanjiang plain wetland, which totalled an area of 5 million ha in early China, had shrunk to 910,000 ha in 2010, a decrease of over 80 % (Ma 2013). Abnormal weather has been a frequent occurrence in recent years. In 2013 especially, the north was severely hit by flooding while the south was affected by drought, and a heat wave in the eastern developed area brought several days of extreme high temperatures. Does this mean that our whole ecological system is under threat?

## Conclusion and Discussion

China's population urbanization started from a very low level in the mid-twentieth century, and then developed rapidly, mainly due to internal migration. But this urbanization is not sustainable, as it remains primarily a pattern of "semi-urbanization", with no successful social integration of migrants (Xiong 2012). Shaped by natural environmental conditions, level of economic development and other factors, the process of population urbanization is also very uneven, mostly concentrated in the eastern part of the country. Since the launching of the reforms and opening-up policy in 1978, population urbanization has made important contributions to China's economic growth, but also has substantial negative consequences on urban and social development and on the ecological environment. This indicates that, although the promotion of population urbanization by the government (Li 2012) is an important driving force, it still has a dual effect in reshaping economic and social development.

Among the issues raised by such unsustainable urbanization is the concentration of the newly added population, i.e. often mostly internal migrants from rural areas. As shown above, when urban planning is inadequate or inappropriate, this concentration in urban centres causes, among other problems, urban traffic congestion,

urban land waste, pollution, marginalization of the migrant population, etc. "Semi-urbanization", which is an essential feature of China's urbanization, also has social consequences in the rural migrant sending areas, where millions of children and elderly are left behind.

China's reforms and opening-up policy have brought many problems in their wake. Some scholars argue that China's economic development is "extensive", as it only focuses on inputs and consumption as drivers of economic growth, but pays little attention to the quality of development (Tu 2011; Zuo 2008). Other scholars point out that China's development focuses only on economic efficiency, blindly pursuing economic growth while ignoring social justice and equity, in particular the growing gap between urban and rural areas (Wang 2011; Zhou and Zhou 2011). China's systemic socioeconomic problems are inevitably found also in the population urbanization process. The positive influence of urbanization on social development and its negative impact on the ecological environment are, in fact, primarily the reflection of current existing problems embedded in the entire national system.

China is a centrally-governed nation. So is population urbanization, as the government tries to retain control over the entire process and to regulate all aspects, including individual mobility, through the household registration system. But such strict control is the direct cause of problems such as "semi-urbanization", with the social marginalization of migrant people, and the increasing number of left-behind children, women and elderly in the countryside. Also, the monopolizing of public resources by the largest cities in their quest for profit and economic growth is leading to a "New Leap Forward" characterized by extraordinary but somewhat artificial urban growth. The unbridled appropriation of arable land in favour of urban expansion and the focus on population urbanization in hopes of spurring economic growth and consumption are incompatible with sustainable development. It is therefore critical to understand the various factors and mechanisms of population urbanization to identify the institutional (or systematic) and strategic barriers to sustainable population urbanization. At the same time, government intervention should be reduced, and urban development should be more respectful of people's well-being. Only in this way will it be possible to ensure that the development of population urbanization is healthy and sustainable, and plays a positive role in promoting economic and social development.

## References

Attané, I. (2002). A half century of Chinese socialism: The changing fortune of peasant families. *Journal of Family History, 27*(2), 150–171.

Cai, F., & Wang, D. (1999). Zhongguo jingji zengzhang de ke chixu xing yu laodong gongxian (China's economic growth and the sustainability of the contribution of labor). *Jingji yanjiu* (*Economic research*)*, 10,* 62–68.

Chan, K. W., & Zhang, L. (1999). The hukou system and rural-urban migration in China: Processes and changes. *The China Quarterly, 160,* 818–855.

Lan, J. (2010). Zhongguo nongcun liushou funü 4700 wan du cheng jiating shengcun zhuangtai kanyou (Chinese 47 million left-behind rural women have to support their family). *Renmin ribao*, 13 Jul.

Lei, H. (2012). Nongcun xiaoxue meitian xiaoshi 56 suo weiyuan jianyi mingque che bing dixian (Every day 56 rural primary school disappear). *Nanfang Ribao*, 13 March. Available at http://www.dnxf.com/news/china/lh/20120313/96803.html. Accessed 17 October 2013.

Li, K. (2012). Xietiao tuijin chengzhen hua shi shixian xiandaihua de zhongda zhanlüe xuanze (The coordination of urbanization is a major strategic choice to achieve modernization). *Xingzheng guanli gaige*. Available at http://theory.people.com.cn/n/2012/1026/c40531-19403044.html. Accessed 30 Nov 2013.

Li, Q., Mao, X., & Zhang, T. (2008). Nongmin gong huikuan de juece, shuliang yu yongtu fenxi (Remittances of migrant workers). *Zhongguo nongcun guancha*. Available at http://www.cngdsz.net/d/img/upfiles_8/b752090d41ad7cab710a9cd8f97d6de9.pdf. Accessed 2 Dec 2013.

Ma, G. (2013). Woguo shidi mianji chixu weisuo sanjiang pingyuan shidi 60 nian rui jian 8 cheng (Continued shrinkage of wetlands in Sanjiang Plain dropped 8% in 60 years). Available at http://china.cnr.cn/NewsFeeds/201302/t20130202_511912611.shtml. Accessed 1 Dec 2013.

NBS. (2011). National Bureau of Statistics of China. *China City Statistical Yearbook*. Available at http://chinadataonline.org/member/yearbooknew/yearbook/Ayblist.aspx. Accessed 2 Dec 2013.

NBS. (2012a). National Bureau of Statistics of China. *China Statistical Yearbook*. Available at http://www.stats.gov.cn/english/statisticaldata/yearlydata/. Accessed 1 Dec 2013.

NBS. (2012b). *National Bureau of Statistics of China. China Statistical Yearbook on Environment*. Beijing: Zhongguo tongji chubanshe.

OECD. (2013). *Urbanisation and green growth in China*. OECD Regional Development Working Papers, 2013/07, OECD Publishing. Available at http://dx.doi.org/10.1787/5k49dv68n7jf-en. Accessed 1 Dec 2013.

PCO. (2012). Population Census Office and National Bureau of Statistics of China, *Zhongguo 2010 nian renkou pucha ziliao* (*Tabulation on the 2010 Population Census of the People's Republic of China*), Beijing: China Statistics Press.

SCC. (1980). State Council of China. Quanguo chengshi guihua gongzuo huiyi jiyao. *Zhongguo Guowuyuan*. Available at http://law.people.com.cn/showdetail.action?id=2601095. Accessed 30 Nov 2013.

Solinger, D. (1999). *Contesting citizenship in urban China: Peasant migrants, the state, and the logic of the market*. Berkeley: University of California Press.

Tu, Y. (2011). GDP hen da baixing shouru hen di jiushi zhi chang gutou bu chang rou (High GDP and Low Income). *Chongqing chenbao*. 11 Jan 2011.

Wang, D. (2012). Rent-seeking in China. Available at http://www.aisixiang.com/data/50526.html#. Accessed 1 Dec 2013.

Wang, G. (2008). Shanghai renkou guimo zengzhang yu chengshi fazhan chixu xing (Population growth and sustainability of urban development in Shanghai). *Fudan xuebao, 5,* 48–57.

Wang, P. (2013). Beijing 279 chu liaohuang di xiangdang yu 80 ge gugong (Beijing 279 fallow land equivalent to 80 Forbidden City). Available at http://news.xinhuanet.com/2013-05/26/c_115908207.htm. Accessed 1 Dec 2013.

Wang, Y. (2011). Zhong sudu qing zhiliang weilai shi nian zhongguo jingji fazhan cun fengxian (Quality of China's economic development over the next decade). *Chinese Radio Network*. Available at http://finance.cnr.cn/yaowen/201101/t20110127_507628261.html. Accessed 1 Dec 2013.

Wang, Z. (2013). Hangzhou wan huagong wuran diaocha: Wushui zhi pai dahai zhi yu xia miejue (Hangzhou bay chemical pollution survey). Available at http://finance.chinanews.com/cj/2013/07-07/5011380.shtml. Accessed 2 Dec 2013.

Wang, G., & Shen, X. (2010). Shanghai chengshi hua fazhan dui chengshi redao xiaoying yingxiang guanxi zhi kaocha (On the relationship between urbanization and heat island effect in Shanghai). *Yaredai ziyuan yu huanjing xuebao* (*Journal of Subtropical Resources and Environment*), *5*(2), 1–11.

Wang, G., & Wu, J. (2012). Chengshi guimo yu kongjian jiegou dui tan paifang de yingxiang (Study on the impact of urban scale and spatial structure on CO2 emission). *Chengshi fazhan yanjiu* (*Urban Studies*), *19*(3), 89–112.

Wang, G., Wei, X., & Shen, J. (2005). Zhongguo sheng ji renkou qianyi yu fazhan guanxi yanjiu (Study on the influence of inter-provincial migration on regional economic development in China). *Fudan xuebao, 3,* 148–161.

Wang, G., Chen, J., & Liu, J. (2008). Zhongguo chengshi nongmin gong shimin hua yanjiu-yi shanghai wei li (Citizenization of peasant migrants during urbanization in China-a case study of Shanghai). *Renkou yu fazhan* (*Population and Development*)*, 14*(1), 1–23.

Wang, G., Pan, Z., & Lu, Y. (2013). Zhongguo sheng ji renkou qianyi quyu moshi bianhua ji qi yingxiang yinsu (Change in China's inter-provincial migration patterns and influential factors). *Zhongguo renkou kexue*, *5*. Available at http://www.govinfo.so/news_info.php?id=12018. Accessed 1 Dec 2013.

World, B. (2006). *An East Asian renaissance ideas for economic growth*. The World Bank. Available at http://www.worldbank.org/. Accessed 2 Dec 2013.

Xiong, Y. (2012). "Ban chengshi hua" dui zhongguo xiangcun minzhu de tiaozhan (The challenge of "semi-urbanization" for rural citizens). *Huazhong shifan daxue xuebao* (*Journal of Huazhong Normal University*)*, 51*(1), 28–34.

Xu, S. (2013). Guowuyuan guanyu chengzhen hua jianshe gongzuo qingkuang de baogao (Report from the State Council on the Urban Construction). Available at http://www.npc.gov.cn/npc/xinwen/jdgz/bgjy/2013-06/27/content_1798658.htm. Accessed 30 Nov 2013.

Xue, Y., Guo, Y., & Li, X. (2013). Woguo chengshi hua yu fangdichan ye xietiao fazhan guanxi yanjiu (China's urbanization and coordinated development of real estate). Available at http://wenku.baidu.com/view/0b7621d6195f312b3169a56e.html. Accessed 2 Dec 2013.

Yuan, B. (2013). Zhongguo si fen zhi yi guotu xian wu mai jin banshu guoren shou yingxiang (A quarter of the homeland and half of the population affected). Available at http://news.163.com/13/0711/21/93HHELP400014JB6.html. Accessed 2 Dec 2013.

Zuo, X. (2008). Cufang fazhan moshi buke chixu (Extensive development model is not sustainable). *Chinese Securities Journal*. 11 Aug 2008. Available at http://finance.sina.com.cn/review/20080811/05085186109.shtml. Accessed 30 Nov 2013.

Zhou, Y. (2010). Beijing shi qu ri jun yongdu 5 xiaoshi "lüse chuxing" pozaimeijie (Beijing area congested five hours daily). Available at http://news.xinhuanet.com/life/2010-04/10/content_13331806.htm. Accessed 2 Dec 2013.

Zhou, S., & Zhou, Q. (2011). Zhengce pianxiang, shouru pian yi yu zhongguo chengxiang shouru chaju kuoda (Policy bias, income offset and expansion of China's urban-rural income gap). *Caimao jingji* (*Finance & Trade Economics*)*, 7,* 29–37.

# Chapter 10
# Urban-Rural Housing Inequality in Transitional China

**Yanjie Bian and Chuntian Lu**

## 10.1 Introduction

Housing is both a substantial part of quality of life and an important dimension of inequality in both rural and urban China. While private housing has been dominant in rural areas since 1949 when the People's Republic of China was founded, urban housing has undergone tremendous changes. From 1956 to 1978, urban China built a socialist system in which public housing was allocated through the employer organization (or *danwei*) as a welfare benefit, rather than a commodity, to urban residents. Some public housing was built by work units and distributed directly to employees as part of a comprehensive welfare provision system, while the rest was constructed and managed by local government housing agencies and allocated to residents whose work units did not have the capacity to build homes for their employees. The 1978 reform and opening-up policy sparked a wave of housing reforms that included rent increases and the sale of public housing units to occupants. Since 1998, the most recent trend has been a large-scale commodification of urban housing. Combined with rapid urbanization, this trend has also affected rural residents whose income and living conditions, by and large, have improved significantly.

The aggregate data of the China 2010 census allows us to analyse inequality in living space, home ownership, rents, and household amenities by type of residence, level of education, and occupational categories in the first decade of the twenty-first century. To supplement this analysis at the aggregate level, this chapter also uses the 2006 Chinese General Social Survey (hereafter 2006 CGSS) to examine the socioeconomic sources of household-level variations in living space in both rural and urban areas. These analyses will be guided by a series of research hypotheses that are derived from a review of relevant research literature, to which we now turn.

Y. Bian (✉) · C. Lu
School of Humanities & Social Sciences, Xi'an Jiaotong University,
Xi'an, China, and University of Minnesota, USA
e-mail: yjbian@mail.xjtu.edu.cn

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_10, 

## 10.2 Literature Review and Research Hypotheses

Housing provision and consumption have changed radically in China since 1949. While private home ownership has always been the predominant housing system in rural areas, urban housing shifted from mostly private rental homes in the early 1950s, into virtually all public rental flats and apartments after the Socialist Transformation (1956–1966) and the Cultural Revolution (1966–1976). The nationwide housing reforms launched in around 1988 then gave rise to the current mixture of increasing home ownership and a shrinking public rental sector (Huang and Clark 2002).

### *10.2.1 Background and Perspectives*

Before the housing reforms were launched in the late 1980s, urban households had to wait for the allocation of public rental housing through their employers (work units, or *danwei*) or local governments (municipal housing agencies) (See Inset 10.1). They paid rents at highly discounted prices or were even housed free of charge. However, they did pay their time as the allocation process could take many years. There has been a rich research literature about this "socialist style" of housing allocation: waiting time and renting discounts were found to vary by industry, ownership, bureaucratic rank,[1] and size of work unit, as well as by sex, seniority, positional power[2] and personal relationship to allocating authorities within the work units (Whyte and Parish 1984; Walder 1992; Bian and Logan 1996; Bian 1994; Bian et al. 1997; Logan et al 1999; Wang and Murie 2000; Huang and Clark 2002). As compared to market economies, the overall housing inequality in urban China was generally low in the state socialist era.

[1] Under Mao, all collective work units were administered by a given government level (i.e. central, provincial, or municipal) and their assigned bureaucratic rank determined the budget and resource allocation. In general, the higher the bureaucratic rank of a work unit, and the closer it was to the central government, the higher its budget and the more resources it would receive. Thus, a work unit's bureaucratic rank determined the amount of housing, wages, and other benefits that could be allocated to its employees. Today, non-state entities do not have a clear-cut sense of bureaucratic rank, even if their operating licences are granted by a given level of government. In the state sector, bureaucratic rank is still a meaningful indicator of the budgetary power and strategic position of any organization (Walder 1992; Bian 1994).

[2] Positional power refers here to the civil service rank of a cadre in the state personnel management system. This system applies to all cadres, before and after the reforms, who work in a government office or a state organization (non-profit and profit-seeking entities). Generally, the higher a cadre's civil service rank, the larger and better the housing he/she is allocated.

**Inset 10.1. Urban Housing Policies from 1949 to 1978**

Immediately after the founding of the People's Republic of China in 1949, China's Communist Party confiscated the land and buildings previously owned by the Kuomintang government and corporate capitalists, and established a state-owned property sector. After the Socialist Transformation (1956–1966), and the Cultural Revolution (1966–1976), most urban housing units became state-owned property and the proportion of private housing decreased rapidly. As the policy of the socialist state gave priority to investment in the sphere of production rather than consumption, the provision of public housing for urban dwellers was regarded as the responsibility of the socialist system. Under this system, the government and public entities carried out urban housing construction projects and exercised ownership rights over public housing.

In terms of ownership rights and managerial responsibilities, there were two types of public housing in the cities: (1) municipal public housing that was managed by the local government housing administration, and housing units that were distributed to households whose heads could not get housing via their employers; and (2) work-unit housing that was built and managed by the public employers and distributed to employees and their families. The allocation of public housing was based on a set of non-monetary factors, such as job rank, job seniority, marital status, and household size. Before 1978, this urban housing system was essentially a state-run welfare system.

**Y.B. & C.L.**

The housing allocation system was different in rural areas, even during the state socialist era, as rural villagers were entitled to build their houses on the homesteads allocated to them, provided they could afford the building cost and got approval from the village authorities. Consequently, home ownership rates were extremely high in rural areas. Under Article 10 of the 1982 Constitution of the People's Republic of China and related land laws, homesteads in villages were the property of the village collectivity, and villagers only had usage rights. This means that the homesteads could neither be sold on the market nor used as mortgages for credit (See Inset 10.2). These regulations have survived the post-1980s housing reforms and have prevented villagers' homes from becoming a commodity asset.

**Inset 10.2 Homesteads in Rural China**

Rural housing policy is closely related to rural land policy. In 1950, the central government issued The Law of Land Reform in the People's Republic of China (*zhonghua renmin gongheguo tudi gaigefa*). That law recognized the private land ownership system, and peasants held titles to the arable lands and homesteads that were allocated to them through the land reforms. After the

agricultural socialist reform (1953–1956), peasants still owned their assigned arable lands, but they were managed by the collective village for agricultural production, and still held title to their homesteads. During the era of the people's communes (starting in 1958), rural land management was based on a three-level ownership system: production team, production brigade, and communes. In this period, homesteads were transferred to collective ownership. Each household had usage rights only, and could not transfer or trade their homestead on the housing market. In the post-reform era after 1979, the basic principle of collective ownership of rural land, including homesteads, remained unchanged. The Constitution of the People's Republic of China (1982) states clearly that unless otherwise declared by law to be state-owned, rural or suburban land that pertains to collective ownership, homesteads, and land or mountains for private use also fall under collective ownership. Only under strict conditions can homesteads be transferred within the same collective organization. The principle of collectivization rules out the sale of rural houses built on homesteads.

**Y.B. & C.L.**

Under China's Constitution, urban land is state property. This was true both before and after the housing reforms. However, a plot of land can be leased to an urban real-estate developer for housing construction under a 70-year lease. A buyer who purchases a home (an apartment within a building complex or a private house) has freehold ownership rights over the home, but not over the land on which the home is built. In other words, the owner can use the home as a residence, lease out the home for rent, or sell the home for a capital gain. All these are legal. When the land lease reaches the 70-year deadline, it is re-examined by the state. Under the Property Law of the People's Republic of China enforced in 2007, the new lease will be granted for another 70 years, which may affect the market values of the homes built on the land, but not the ownership rights of dwellers. Similarly, rural villagers can build their homes on the allocated homesteads (see Inset 10.2), and the homesteads are legally leased by the collective village to the rural villagers. These latter are therefore owners of the house they build, but not of the allocated homesteads. The continuous influx of both capital investments and rural migrants into the cities has contributed to the rapid increase in urban housing prices. In contrast, except for industrialized and commercialized rural areas close to cities and towns, agricultural production is still the main source of income for most Chinese villages and residential housing remains largely a local market confined to the village itself.

The post-1980s housing reforms aimed to commoditize and privatize home ownership in the cities (Davis 2000) (see Inset 10.3). After more than 20 years, urban home prices have skyrocketed and inequalities have widened significantly in both rural and urban areas. In urban areas, a private home is regarded as a desirable asset and a key vehicle for wealth accumulation. Similar trends have also been observed in the countryside, where richer villages boast villas with gardens while poorer ones

have only bungalows and shacks. At the same time, the rural-urban gap has also widened, not just in income but also in housing. According to the National Bureau of Statistics, the rural-urban income ratio was 1:3.33 in 2009.[3] In most rural areas, a whole villa can be built for the price of a room with eight square meters of floor space in Beijing. While most household surveys reveal housing inequality in the cities (Logan et al. 1999; Huang 2005; Huang and Jiang 2009), relatively little is known about housing inequalities at the national level.

**Inset 10.3 Urban Housing Policies After 1978**

Accompanying the post-1978 economic reform was the reform of the urban housing system, with a 30-year process that eventually led to urban housing privatization. Earlier pilot housing reforms did not achieve the expected results because the Constitution and land laws prohibited the transfer of land among public and private developers. In 1988, the Constitution was amended to allow for land transactions. This change provided the necessary conditions for the privatization of housing and laid the foundations for a real-estate market to emerge. In the same year, the State Council issued an "Implementation Plan for a Gradual Housing System Reform in Cities and Towns" (*quanguo chengzhen fenqi fenpi tuixing zhufang zhidu gaige shishi fangan de tongzhi*). This document marked a turning point in urban housing reform, paving the way for nationwide implementation in all urban areas of reforms previously tested in selected cities. Two years later, the State Council issued "Temporary Regulations on the Leasing and Selling of State-Owned Land in Urban Areas" (*chengzhen guoyou tudi shiyongquan churang he zhuanrang zanxing tiaoli*), and land in the affected areas quickly turned into a commodity. In 1998, the State Council issued the "Notice On Further Deepening the Reform of Urban Housing System and Speeding Up Housing Construction" (*guanyu jinyibu shenhua chengzhen zhufang zhidu gaige, jiakuai zhufang jianshe de tongzhi*). Its goal was to introduce market mechanisms to the housing system and to transform urban housing from a welfare benefit to a priced commodity. In 1999, the central government introduced the "Common Housing Accumulation Fund" (*gongjijin*), which was made available to workers whose employers, public or private, made contributions to the fund. In August 2003, the State Council issued the "Notice on Promoting the Sustained and Healthy Development of the Real-Estate Market" (*guanyu cujin fangdichan shichang chixu fazhan de tongzhi)* that turned the real-estate market into a pillar industry. These measures successfully boosted the Chinese housing market, and today, real-estate is one of the most profitable industries in the Chinese economy. Observers and researchers have argued that this real-estate industry is at

[3] "Urban-rural income gap widest since reform". *China Daily*. Available at http://www.chinadaily.com.cn/china/2010-03/02/content_9521611.htm. Accessed 26 Nov 2013.

risk of speculative bubbles. While regional variation is observed in the pace of housing commodification and privatization, the old welfare housing policy has been largely transformed into a market-oriented housing institution.
**Y.B. & C.L.**

Housing inequality is a common phenomenon in market economies. In the United States and the United Kingdom, for example, housing inequality is widely observed and is associated with a range of socioeconomic variables including age, sex, education, occupation, and income, as well as race and ethnicity (HWI 2010). In the former socialist countries, housing inequality was also observed, primarily reflecting the gradient of political power (Szelenyi 1978). How was this socialist style of housing inequality altered by the post-1980s reforms? Here, the "market transition debate" provides a point of departure (Nee 1989, 1991, 1996; Bian and Logan 1996; Xie and Hannum 1996; Zhou 2000). Although this debate has shown no sign of resolution, it provides a framework for analysis of housing inequality (Bian and Liu 2005; Huang and Clark 2002; Huang and Jiang 2009; Hu 2012; He and Xia 2012).

At the centre of the debate is Nee's market transition theory (Nee 1989, 1991, 1996). It is argued that the transition from redistributive to market coordination shifts sources of power and privilege to favour direct producers relative to redistributors. Consequently, as the process of marketization advances, there will be increasing returns to human capital and entrepreneurship and decreasing returns to political capital and power. While scholars have reached some consensus about the increasing values of human capital during market reforms, they argue that in China, cadres continue to exercise political power over market resources in the enduring Communist party-state (Bian and Logan 1996). Nee's response is a reformulated technocratic-continuity hypothesis (Cao and Nee 1998): former cadres can depend on their administrative expertise acquired under state socialism to maintain high socioeconomic status in the post-reform era. There is an alternative hypothesis about the conversion of political power into economic assets during the transition: the former cadres can translate their political power and capital into various forms of economic advantage during market transition (Rona-Tas 1994), either through their office capacities (Walder 2003) or cultural capital (Szelenyi and Kostello 1996). In China, indeed, the power still wielded by political elites continues to play an important role in income inequality (Bian and Logan 1996; Zhou 2000; Bian and Zhang 2002; Walder 2003).

### *10.2.2 Related Hypotheses*

In an increasingly marketized China, which nonetheless remains under the governance of a durable Communist party-state, one lesson from the market transition debate is that both market and non-market mechanisms are at work to generate outcome inequalities. Four of these mechanisms are of particular relevance to hous-

ing inequality: socioeconomic status, place of *hukou* registration, work unit, and political power. Socioeconomic status is a combination of education, occupation, and income, and, in the context of market transition, these are the rising forces of the market institution. Therefore, if housing inequality is strongly influenced by measures of socioeconomic status, then the result can be interpreted as indicating the increasing significance of market forces in the provision and consumption of housing in a fast-changing China. On the other hand, place of *hukou* registration, work unit, and political power are the factors that, by and large, represent the legacies of China's state socialist era, and thus their influences on housing inequality will help us gain a sense of institutional continuity from the past. For each of these factors, we formulate a research hypothesis to guide our data analysis.

#### 10.2.2.1 The "Socioeconomic Status" Hypothesis

With the understanding that socioeconomic status is a combination of education, occupation, and income, this hypothesis is straightforward: a person with a higher socioeconomic status is more likely to own a home of a larger size than his/her counterpart with a lower socioeconomic status. While the hypothesis is derived from the market transition theory, some scholars have found no effect of education on home tenure type (Huang and Clark 2002; Huang 2004). However, Li and Li (2006) found that the higher the level of education, the more likely a person is to become a homeowner. In addition to home tenure, living space and amenities also can be used to gauge housing inequality. Two recent studies using different data sets have demonstrated that education has a positive effect on living space and amenities in urban areas (Hu 2012; Huang and Jiang 2009). In terms of income effect, Logan et al. (1999) found that income has a positive effect on living space. However, a recent study by Hu (2012) shows that no such effect exists. While scholars report small or mixed effects of occupational status on housing from city-based surveys (Li 2000a, 2003; Huang 2004; Li and Li 2006), analysis of the 2000 census by Bian and Liu (2005) showed that households headed by managerial and professional elites are more likely to have larger and higher-quality homes than non-elites. We will analyse both the 2010 census and the CGSS 2006 to test the socioeconomic status hypothesis at the national level for urban and rural China.

#### 10.2.2.2 The "*Hukou* Inequality" Hypothesis

Signifying the rural-urban divide, the *hukou* system is one of the most important institutions in China. It limited a person's access to a range of redistributive benefits in the past, and is still today a defining structural constraint that prevents rural peasants from obtaining market opportunities and rewards, including housing (Chan 1994; Cheng and Selden 1994; Logan et al 2009). An analysis of recent data by Huang and Jiang (2009) demonstrated that people with a local non-agricultural *hukou* tend to have better housing conditions than those without it. Local urban

residents are also more likely to own a home than other groups (Logan et al. 2009). When a city-based household survey considers a person's category of permanent *hukou* (agricultural vs. non-agricultural) and his/her place of work (local vs. non-local), individuals can be divided into four groups: local residents with non-agricultural *hukou* (local urban residents), local residents with agricultural *hukou* (suburban peasants), migrants with non-agricultural *hukou* registered in another city or town (urban migrants), and migrants with agricultural *hukou* registered elsewhere (rural migrants). Under current housing policies in China, only the residents who have local non-agricultural *hukou* and meet certain criteria of household type and income are entitled to purchase government-subsidized housing. Despite more than two decades of housing reforms, rural migrants with rural *hukou* status still face enormous discrimination.

#### 10.2.2.3 The "Work Unit (*danwei*) Inequality" Hypothesis

Work units, or place of employment, were one of the most important institutions until the 1990s, as they allocated economic resources, organized political activities, and exercised social control over employees and their families (Walder 1992; Bian 1994; Wu 2002). Before the housing reforms, a great majority of urban residents lived in the housing owned and run by the work unit of one of the family members. One of the goals of the housing reforms was to detach work units from urban housing provision. This has largely succeeded, but not without legacies. At present, work units still influence housing provision in several ways: some of them sell work-unit housing to their employees at a substantively discounted price, others lease work-unit housing to their employees at a below-market rent, and still others build subsidized commodity homes for their employees. The State Council called for an end to welfare allocation of housing in 1998, so most households have to buy or rent an apartment through the market. In China, employees and their work units both contribute to a common "housing accumulation fund" (*gongjijin*). Employees put a share of their salaries into the fund and the work units match the amounts; this is the fund that employees later use to purchase private homes. As should be clear, inequality in this fund varies with personal income and with the financial health of the work units. If a work unit is under the jurisdiction of a government agency, state institution, or state-owned enterprise, employees of this work unit are more likely to save more common accumulation funds than those with non-state employers. While variations in work units' capacity to influence their employees' housing conditions can be measured in several ways (Walder 1992; Logan et al. 1999; Huang and Jiang 2009), our CGSS 2006 enables us to assess the inequality in living space between employees of state work units and non-state employers.

#### 10.2.2.4 The "Political Power" Hypothesis

Learning from the power persistence thesis (Bian et al. 1997) and power conversation thesis (Rona-Tas 1994), political power over the distribution of market and

non-market resources is an important dimension of institutional continuity in China's transition towards a market economy. Therefore, we expect cadres, or those who hold office authority in government agencies, state institutions, and state enterprises, to have a significant advantage over non-cadre masses in terms of living space, home ownership, and housing quality. How political power works for housing distribution may differ before and after the housing reforms. In the pre-reform era, cadres could make formal rules of housing allocation favourable to themselves (Whyte and Parish 1984). Following the housing reforms, high-ranking cadres continue to enjoy the allocation of public housing by the government, others can convert their pre-reform allocated housing units into privately owned homes at very low prices, and still others can use their official power to influence the discounted and commodity housing markets in their favour (Logan et al. 1999; Li 2000b; Pan 2004). Using the 1995 China 1% Population Survey and the 2000 census data for Beijing, Huang and Jiang (2009) concluded that households with more officials of higher rank still occupied larger and better dwellings in 1995, but this was no longer the case in 2000. Our analysis of the 2010 census and the 2006 CGSS will provide an updated answer to the question of whether political power still plays a role in housing inequality in the first decade of the twenty-first century.

## 10.3 Variations at the Aggregate Level: Analysis of the Census Data

This chapter aims at accomplishing two analytical tasks. The first is to provide an assessment of overall housing inequality at the national level. The available aggregate data gives the general levels of living space and housing quality for the entire country as well as for cities, towns, and villages separately. These analyses will give us an empirical understanding of housing inequalities between rural and urban areas. The second task is to analyse selected housing indicators within the urban areas. Here, we will show variations of these selected housing indicators by level of education and occupational category with a view to testing the socioeconomic status hypothesis at aggregate levels.

### *10.3.1 Overall Housing Conditions and Rural-Urban Inequality in China*

Table 10.1 presents the statistical results of the analysis of aggregate data from the 2010 census. There are four measures of housing provision and quality that can be used to measure inequalities: per capita living space, housing tenure, monthly rents, and household amenities.

**Table 10.1** Indicators of housing provision and quality by residential locality in 2010

| | China | Urban[d] | Rural areas |
|---|---|---|---|
| 1. *Per capita living space ($m^2$)*[a] | 30.41 | 30.07 | 30.72 |
| 2. *Average monthly rents per household (yuan)*[b] | 425.14 | 447.30 | 234.34 |
| 3. *Housing tenure (%)* | | | |
| Home ownership[c] | 85.4 | 74.9 | 96.3 |
| Self-built housing | 62.3 | 31.5 | 94.2 |
| Purchased commodity housing | 11.3 | 21.8 | 0.6 |
| Purchased existing housing | 2.7 | 4.6 | 0.8 |
| Purchased affordable housing | 2.2 | 4.1 | 0.2 |
| Purchased public housing | 6.8 | 12.9 | 0.5 |
| Home rental | 12.0 | 21.1 | 2.5 |
| Rented public housing | 1.5 | 2.5 | 0.4 |
| Rented other housing | 10.5 | 18.6 | 2.1 |
| Other | 2.7 | 4.1 | 1.2 |
| 4. *Household amenities (%)* | | | |
| Independent kitchen | 82.0 | 87.1 | 76.8 |
| Shared kitchen | 2.6 | 2.9 | 2.3 |
| No kitchen | 15.3 | 10.0 | 20. 9 |
| Independent toilet | 66.1 | 77.9 | 54.0 |
| Shared toilet | 6.4 | 6.5 | 6.2 |
| No toilet | 27.5 | 15.6 | 39.8 |
| Tap water | 64.6 | 86.7 | 41.8 |
| No tap water | 35.4 | 13.4 | 58.3 |
| Shower with water heater | 54.4 | 71.8 | 36.4 |
| No heater shower | 45.6 | 28.2 | 63.6 |

[a] Per capita living space measures construction area, which includes all areas within a housing unit and some shared common areas such as stairs and common corridors

[b] Average rents are the sum of the product of the midpoint price and the percentage of households falling in each category. The midpoint of the price range is treated as the "average" price for the range. For the last open-ended category, 4500 is used as the midpoint of the range of 3000+ and 50 is used for 100 and below

[c] Rate of homeownership is the sum of self-build housing, purchased commodity housing, existing housing, affordable and public housing

[d] Urban indicators are calculated from combined city and town data.

Source: PCO (2012)

The national average per capita living space was 30.41 square meters in 2010, and the urban (30.07) and rural (30.72) averages are very similar.[4] These figures reflect a substantial improvement with respect to 1978, the first year of China's market reforms. In that year, the national averages of per capita living space were extremely low for both cities (3.6) and rural areas (8.1) (NBS 1998).

Another useful indicator is housing tenure type — i.e. whether or not a household owns or rents its home. As shown in Table 10.1, the national average home

[4] The 2010 census reports data in three separate categories: cities, towns, and villages. In the present chapter, the data for the cities (*chengshi*) and towns (*zhen*) are merged into the combined category of "urban", while village population is qualified as "rural" (living in the areas excluding *chengshi* and *zhen*).

ownership rate in 2010 was 85.4%, with a significant difference in urban (74.9%) and rural (96.3%) averages. For urban areas, the rate of home ownership has risen spectacularly, from just 24% in 1990 (Bian and Liu 2005). As indicated by the 2010 census, an urban household acquires a home either by purchasing new commodity housing[5] in the market (21.8%), purchasing a public housing unit previously rented from the work unit or local government real estate (12.9%), self-building (31.5%), purchasing an affordable home from government projects (4.1%), or purchasing an existing market-priced housing unit (4.6%). Clearly, privatization of urban housing has occurred through both the transfer of public housing into private ownership and the emerging private housing market. By contrast, home ownership in towns, and in villages especially, relies on home building by the households themselves.

Nationally, the rental market accounts for 12% of homes as of 2010, and the census reveals significant differences in home renting rates between urban (21.1%) and rural (2.5%) areas. The government (1.5%) plays a much smaller role in rental markets than private real-estate companies (10.5%), and this applies to both rural and urban areas. As shown in Table 10.1, the average monthly rents are 447.3 yuan per household in urban areas and 234.3 yuan per household in rural areas. The rural-urban disparities in home rental prices reflect differences in land and labour prices between the cities, towns, and villages, which are also reflected in income inequalities across the three types of residential locality in China.

A set of measures of housing quality is available from the 2010 census, including information on household amenities: independent kitchen, independent toilet, tap water, and heater shower. Nationally, homes differ significantly in these quality measures as not all homes have an independent kitchen, independent toilet, tap water, or heater shower. Rural-urban inequalities in household amenities are very large: homes in the cities are generally better equipped and more comfortable as a greater majority of homes have an independent kitchen (87.1%, versus 76.8% in rural areas), an independent toilet (77.9%, versus 54.0%), and tap water (86.7%, versus 41.8%); 71.8% of homes are equipped with a heater shower (versus 36.4% in rural areas). Homes in the towns, and especially the villages, are less likely to have these amenities.

In sum, the results of Table 10.1 suggest three tentative conclusions about overall housing conditions in China. First, after 30 years of market reforms, there has been a significant improvement in terms of living space and home ownership. Second, while there is not much variation in living space between urban and rural areas, there are significant disparities in the ways in which a household becomes a homeowner. Third, household amenities are generally much better in the cities than in villages. Overall, these findings support our *hukou* inequality hypothesis: rural dwellers tend to be more disadvantaged in terms of housing conditions than their urban counterparts.

[5] In the official statistics, "commodity housing" refers to private homes that are sold by real-estate developers and purchased by households, who then have full ownership rights.

**Table 10.2** Selected indicators of housing inequality by education and occupation, urban in 2010

| Education | Per capita living space ($m^2$) | Home ownership rate (%) | Purchased commodity housing rate (%) | Purchased public housing rate (%) | Average monthly rent (yuan) |
|---|---|---|---|---|---|
| *Education* | | | | | |
| Illiterate | 30.59 | 81.5 | 7.0 | 11.2 | 264.34 |
| Primary school | 29.40 | 78.0 | 9.1 | 9.4 | 327.42 |
| Middle school | 28.12 | 69.9 | 15.1 | 10.3 | 393.73 |
| High school | 30.30 | 75.1 | 28.8 | 17.3 | 503.35 |
| Vocational | 34.80 | 80.3 | 42.4 | 17.7 | 647.06 |
| College | 37.45 | 81.4 | 47.5 | 17.9 | 855.55 |
| University | 39.55 | 77.0 | 46.2 | 16.1 | 1193.64 |
| *Occupation* | | | | | |
| Cadres/officials | 38.05 | 78.22 | 41.83 | 9.46 | 895.65 |
| Professional and technical personnel | 35.15 | 78.64 | 40.87 | 14.77 | 639.41 |
| Clerks and other related personnel | 34.58 | 78.77 | 38.06 | 16.05 | 569.59 |
| Commerce/services | 30.06 | 60.32 | 22.91 | 7.14 | 568.39 |
| Production/equipment operators | 27.86 | 61.45 | 15.57 | 8.90 | 299.25 |
| Agricultural workers | 32.61 | 95.77 | 2.75 | 1.11 | 260.52 |
| Others | 29.83 | 68.51 | 21.56 | 9.10 | 389.03 |

See Table 10.1 and its notes for interpretations of the indicators
Source: Authors' calculations based on PCO (2012)

### *10.3.2 Housing Inequality by Education and Occupation in the Cities*

In the data files on cities, several important housing indicators were selected to examine housing inequality by level of education and occupational category of the household head. The results are presented in Table 10.2.

The first section of Table 10.2 gives a general sense that housing conditions in urban areas improve as the educational level of the household heads increases. Per capita living space, for example, increases from 28.12 $m^2$ for middle school level to 39.55 $m^2$ for university. Private home ownership rates increase from 69.9% for middle school education to 81.36% for college education. The ability to purchase a commodity housing unit from the market increases significantly from illiterate (7.0%) to college (47.5%) and university (46.2%) educational levels. While the percentages fluctuate across levels of education for purchasing an existing home, rents increase steadily from 264.34 yuan for no formal school to 1193.64 yuan for university. The results for rents contradict an earlier report that education had no clear effect on rents (Huang 2005).

We must remember, however, that level of education is associated with sex and especially age, so the results for housing inequality by educational level shown in Table 10.2 are no more than tentative. For example, we know that illiterates tend to be in older age groups and the university-educated in younger ones. We can obtain a better assessment of the educational effects from multiple regression analysis based on the CGSS dataset, in which household heads' age, sex, and education are simultaneously included as predictors of living space.

The second section of Table 10.2 displays the results for housing inequality by occupational category of household head. Confined to the census data file, there are seven occupational categories. Following Huang (2005), we classify these occupations into three groups. The first group includes the households that are headed by cadres/officials, professional and technical personnel, and clerks and other related personnel. This group of households tends to have more per capita living space, higher home ownership rates, greater ability to purchase commodity homes, and greater ability to pay higher rents than the other two groups. The second group includes commerce/service workers and production/equipment operators, who comprise the great majority of the urban working classes in both state and non-state sectors. As compared to the first group, households in this second group have less per capita living space, lower home ownership rates, less ability to purchase commodity homes, and pay lower rents. The two groups have similar rates for converting their previously rented housing units into privately owned homes. The third group includes agricultural workers (here mostly farmers living on the outskirts of expanding cities) and "other" workers. We suspect that a significant number of people in this "other" category are migrant workers with unskilled jobs. Compared to the other two groups, this group of households show mixed results in terms of housing conditions with one exception: agricultural workers have extremely high home ownership rates and extremely low rates of purchased commodity homes.

The above results for variations in housing conditions by education and occupation suggest the following tentative conclusions. First, compared to 10 years ago (Huang 2005; Bian and Liu 2005), urban households in 2010 are more likely to purchase commodity housing and hence to become private home owners, and this is true across all levels of education and occupational categories. Housing privatization has been largely successful. Second, there is some indication of educational variation in urban housing. With increasing level of education of the household head, urban households tend to have more living space and find it easier to own or rent a home. This can be interpreted as the result of market forces that value education. Finally, there is a clear sign that those occupational classes which benefited most from the state socialist era continue to enjoy advantages on the housing market. This institutional continuity translates, as well as reinforces, the pattern of housing inequality carried over from the pre-reform era into the post-reform era of a mixed economy. This generally lends support to our socioeconomic status hypothesis.

## 10.4 Household-Level Variations: Analysis of the CGSS

### *10.4.1 Data and Variables*

The analysis of the census file so far has shown housing inequalities at aggregate levels, and the analysis of the CGSS 2006 in this part will help us both verify the validity of the aggregate results and more systematically test our four hypotheses at household levels. The 2006 CGSS contains a critical variable of housing inequality: respondent household's per capita living space at the time of the survey. In addition, the variables that measure hypothesized mechanisms of housing inequality are also included in the 2006 CGSS.

The CGSS is a national representative household survey. It was conducted annually from 2003 to 2006, and after two biennial surveys in 2008 and 2010 the project has since returned to an annual survey arrangement. As in other years, the 2006 CGSS survey used a multistage, stratified probability sampling method. We expect to find cluster effects at the neighbourhood level with this sampling method, which might violate the assumption of independent observations in the ordinary least square regression that we will use. In addition, China's large interregional variations in levels of development and marketization imply unequal housing prices across the localities. For all these reasons, we conduct a multilevel analysis to examine contextual and individual-level effects on per capita living space in urban and rural China, respectively.

Per capita living space will be used as the dependent variable in both the rural and urban analyses. To capture its linear effect, per capital living space is transformed into a natural log measure. At the household level, our independent variables include the respondent's age, sex and marital status, per capita income of the household, household size, education, a dummy variable of occupation (professional/technical personnel or not), employment sector (state vs. non-state), *hukou* status, and a political status variable (cadre vs. not cadre). We include two contextual variables, both measured at the provincial level. The first is a "marketization index",[6] which was created by Chinese economists to gauge the level of market forces and has proved its reliability across studies (Fang et al. 2010). The second is the "average housing price" from the 2006 National Statistical Yearbook. Housing price not only reflects the supply of housing but also the demand for housing stock. It is expected to have a negative effect on per capita housing living space. The variables are described in Table 10.3.

[6] In studies by Fan Gang et al., the "marketization index" is a 0–10 scale that indicates a province's relative position in the progress towards market economy as compared to other provinces in China. This index is based on 19 indicators of institutional arrangements under five major areas of market-oriented reforms. To find out more about how to calculate this index: http://cerdi.org/uploads/sfCmsContent/html/192/Fangang.pdf.

**Table 10.3** Descriptive statistics of variables in models

| | Urban | *N*=6013 | Rural | *N*=4138 |
|---|---|---|---|---|
| Variables description | Percent/mean | SD | Percent/mean | SD |
| Per capita living space | 37.02 | 24.29 | 54.09 | 39.31 |
| *Household-level variables* | | | | |
| Age | 41.83 | 13.95 | 43.19 | 12.63 |
| Male | 0.45 | 0.5 | 0.48 | 0.49 |
| Married | 0.76 | 0.43 | 0.87 | 0.33 |
| Per capita income (in thousand yuan) | 17.32 | 112.71 | 5.88 | 19.9 |
| Household size | 2.31 | 0.93 | 2.45 | 1.02 |
| Education | 10.3 | 3.55 | 6.66 | 3.65 |
| Professional/technical personnel | 0.26 | 0.44 | 0.07 | 0.26 |
| *Hukou* status (Rural migrants as reference) | | | | |
| Local urban residents | 0.8 | 0.4 | NA | NA |
| Suburban farmers | 0.11 | 0.31 | NA | NA |
| Urban migrants | 0.03 | 0.17 | NA | NA |
| Cadre | 0.06 | 0.23 | 0.03 | 0.17 |
| Employed in the state sector | 0.34 | 0.48 | NA | NA |
| *Provincial- level variables* | | | | |
| Marketization index | 6.81 | 1.72 | 6.93 | 1.54 |
| Average housing price | 3017.86 | 1648.27 | 2624.12 | 883.75 |

*NA* not available in the dataset

Source: Authors' calculations

### *10.4.2 Model Specifications*

We conduct our analysis and model estimation in several steps. First, a null model (Model 1) is estimated. This is a model without any explanatory variables at either household or provincial levels. The models are specified as follows:

$$\text{Level 1 Individual level}: Y_{ij} = \beta_{0j} + r_{ij}$$
$$\text{Level 2 Provincial level}: \beta_{0j} = \gamma_{00} + u_{0j}$$

where $Y_{ij}$ is the per capita housing living space for the respondent household *i* in *j* province, $\beta_{0j}$ is the mean per capita living space for province *j,* and $r_{ij}$ refers to the residual error term. The variance of $r_{ij}$ is equal to $\sigma^2$, which represents within-province variability in per capita living space. $\gamma_{00}$ refers to the mean of per capita housing living space. The variance of $\mu_{0j}$ is equal to $\tau_{00}$, which represents the between-province variance in per capita living space. The aim of this model is to decompose variance at the household and provincial levels. The intra-class correlation coefficient (ICC) is defined as $\tau_{00}/(\tau_{00}+\sigma^2)$ that gives the proportion of the total variance in the dependent variable that exists among provinces. A low value indicates that there is little variance among provinces.

After this null model, the hypotheses are systematically tested in the following models. In the models based on urban areas, we included all the household-

level variables, except for *hukou* status dummy variables with their fixed regression slopes, in Model 2. This model is designed to test our socioeconomic status hypothesis, political power hypothesis, and work unit inequality hypothesis. Next, we add *hukou* status dummy variables in Model 3, which is designed to test our *hukou* status hypothesis. Finally, two provincial-level variables are included in Model 4, in which we assess provincial effects on our household-level coefficients.

Some urban variables are not available in the rural part of the CGSS survey, so we make some adjustments in the rural models. Rural Model 1 is the same as urban model 1. In rural Model 2, all household-level variables except for the cadre dummy are included. In rural Model 3, the cadre dummy is added. In the final rural model, two provincial level variables are included.

In both urban and rural analyses, the random intercept model is used. The intercept in the model is thus the provincial level mean of per capita living space and is allowed to vary among provinces. In addition, household level coefficients are assumed to be fixed and the random intercept is the only random "group effect". The complete models with household-level and provincial-level variables can be represented as follows:

Individual level in urban areas:

$$\begin{aligned} \mathrm{Ln}\left(\mathrm{Y}_{ij}\right) = {} & \beta_{0j} + \beta_{1j}\left(\mathrm{X}_1\right) + \beta_{2j}\left(\mathrm{X}_2\right) + \beta_{3j}\left(\mathrm{X}_3\right) + \beta_{4j}\left(\mathrm{X}_4\right) \\ & + \beta_{5j}\left(\mathrm{X}_5\right) + \beta_{6j}\left(\mathrm{X}_6\right) + \beta_{7j}\left(\mathrm{X}_7\right) + \beta_{8j}\left(\mathrm{X}_8\right) + \beta_{9j}\left(\mathrm{X}_9\right) \\ & + \beta_{10j}\left(\mathrm{X}_{10}\right) + \beta_{11j}\left(\mathrm{X}_{11}\right) + \beta_{12j}\left(\mathrm{X}_{12}\right) + \mathrm{r}_{ij} \end{aligned} \tag{10.1}$$

Individual level in rural areas:

$$\begin{aligned} \mathrm{Ln}\left(\mathrm{Y}_{ij}\right) = {} & \beta_{0j} + \beta_{1j}\left(\mathrm{X}_1\right) + \beta_{2j}\left(\mathrm{X}_2\right) + \beta_{3j}\left(\mathrm{X}_3\right) + \beta_{4j}\left(\mathrm{X}_4\right) + \beta_{5j}\left(\mathrm{X}_5\right) \\ & + \beta_{6j}\left(\mathrm{X}_6\right) + \beta_{7j}\left(\mathrm{X}_7\right) + \beta_{8j}\left(\mathrm{X}_8\right) + \mathrm{r}_{ij} \end{aligned} \tag{10.2}$$

Provincial level in both urban and rural areas:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01}\left(\mathrm{W}_1\right) + \gamma_{02}\left(\mathrm{W}_2\right) + \mu_{0j} \\ \beta_{qj} &= \gamma_{q0},\ q = 1, 2, \ldots, \mathrm{Q} \end{aligned}$$

In the model, Ln ($Y_{ij}$) represents the log transformed per capita living space for the respondent household *i* in *j* province. Household-level individual variables consist of $X_1$ (male = 1), $X_2$ (per capita income), $X_3$ (age), $X_4$ (married = 1), $X_5$ (household size), $X_6$ (education), $X_7$ (professional/technical = 1), $X_8$ (cadre = 1), $X_9$ (employment in the state sector = 1), $X_{10}$ (local urban residents), $X_{11}$ (suburban farmers), $X_{12}$ (urban migrants), and rural migrants as reference group for the last three *hukou* dummy variables. Provincial-level variables include $W_1$ ("marketization index") and $W_2$ (average housing price). These equations emphasize that the slope coefficients are fixed. In the full model, $\beta_{0j}$ presents the effects of provincial-level

variables on the mean level of per capita living space on the *j*th province, while the regression coefficients are assumed to have no variation across units. A hierarchical linear model (HLM) is applied here to analyse the data. Full maximum likelihood is used to estimate parameters.

Since there is a large difference in each unit of independent variables, all the independent variables were standardized before running the models. The results for household-level and provincial-level effects on per capita living space are presented in Table 10.4 for urban areas and in Table 10.5 for rural areas.

### *10.4.3 Urban Model Estimates and Interpretations*

Model 1 in Table 10.4 shows a two-level random intercept null model. We examine how much of the total variance can be attributed to the household level and how much to the provincial level. The variance among provinces (0.024) is much smaller than the variance among households within provinces (0.252). This is also reflected in the intra-class coefficient, which is 0.086. It suggests that 8.6% of the total variance is between provinces. The chi-square test of the estimated between-province variance component proved to be highly significant (chi-square = 585.58, degree of freedom = 27). The significant chi-square tests of the estimated between-province variance component indicates that significant variation between provinces can be explained by household and provincial-level characteristics in urban models.

For Model 2 in Table 10.4, all variables are entered into the model except for *hukou* status variables. As shown, age, per capita income, and marital status have no significant effect on the average per capita living space. Contrary to our expectation, education has no significant effect. As expected, however, households headed by professional/technical job holders tend to have larger homes than those headed by non-professional/technical job holders. Cadres/officials have a significant advantage over non-cadres in terms of living space. State employees do not have such advantages over non-state employees. Compared to other variables, household size has the strongest influence on per capita living space; the negative coefficient indicates that larger families tend to have less per capita living space.

When *hukou* status variables are added in Model 3, the variances for household level and provincial level decrease from 0.024 and 0.209 to 0.023 and 0.0206 respectively, indicating the usefulness of including *hukou* status variables in the model. We find that *hukou* has a positive significant effect on per capita housing living space and it verifies the *hukou* inequality hypothesis. Compared to rural migrants, urban migrants,[7] suburban farmers, and local urban residents have greater living space. Among these four groups, suburban farmers have the most spacious dwellings. The main possible reason is that suburban peasants are entitled to build their own house under current land policy.

[7] Rural migrants are migrants with a rural *hukou* who have migrated to a city or a town. Urban migrants have a *hukou* in their home city or town, and have migrated to another city or town.

**Table 10.4** Multi-level analysis of per capita living space in urban China

| Model | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Fixed effects | Coefficient (S.E) | Coefficient (S.E) | Coefficient (S.E) | Coefficient (S.E) |
| Intercept | 3.49*** | 3.49*** | 3.49*** | 3.49*** |
| | (0.03) | (0.03) | (0.03) | (0.024) |
| *Household-level variable* | | | | |
| Age | | 0.01 | 0.001 | 0.001 |
| | | (0.012) | (0.012) | (0.012) |
| Male | | −0.004 | −0.005 | −0.001 |
| | | (0.004) | (0.004) | (0.004) |
| Married | | −0.004 | −0.005 | −0.005 |
| | | (0.009) | (0.008) | (0.008) |
| Per capita income | | 0.003 | 0.004 | 0.004 |
| | | (0.004) | (0.003) | (0.003) |
| Household size | | −0.206*** | −0.212*** | −0.212*** |
| | | (0.014) | (0.013) | (0.013) |
| Education | | 0.008 | 0.006 | 0.006 |
| | | (0.009) | (0.009) | (0.009) |
| Professional/technical personnel | | 0.012* | 0.012* | 0.012* |
| | | (0.006) | (0.006) | (0.006) |
| Cadre | | 0.024*** | 0.024*** | 0.024*** |
| | | (0.005) | (0.005) | (0.005) |
| Employed in the state sector | | −0.012 | −0.012 | −0.012 |
| | | (0.008) | (0.008) | (0.008) |
| Local urban residents | | | 0.075*** | 0.075*** |
| | | | (0.010) | (0.018) |
| Suburban farmers | | | 0.082*** | 0.082*** |
| | | | (0.016) | (0.016) |
| Urban migrants | | | 0.018*** | 0.018*** |
| | | | (0.007) | (0.007) |
| *Provincial-level variables* | | | | |
| Marketizaton index | | | | 0.101 |
| | | | | (0.033) |
| Average housing price | | | | −0.129 |
| | | | | (0.031) |
| Random effects | Variance component ($\chi^2$) | Variance component ($\chi^2$) | Variance component ($\chi^2$) | Variance component ($\chi^2$) |
| Average per capita living space (provincial level) | 0.024*** (585.58) | 0.024*** (753.08) | 0.023*** (722.99) | 0.017*** (480.73) |
| Level 1 effect | 0.252 | 0.209 | 0.206 | 0.206 |

*$p<0.1$; **$p<0.05$; ***$p<0.01$
Source: Authors' calculations

Provincial-level variables are added in Model 4. When all household-level variables are controlled, the marketization index is positively correlated with living space. It suggests that urban residents living in provinces with a higher degree of

**Table 10.5** Multi-level analysis of per capita living space in rural China

| Model | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Fixed effects | Coefficient (S.E) | Coefficient (S.E) | Coefficient (S.E) | Coefficient (S.E) |
| Intercept | 3.71*** | 3.71*** | 3.71*** | 3.63*** |
| | (0.049) | (0.051) | (0.052) | (0.066) |
| *Household-level variables* | | | | |
| Age | | 0.038** | 0.038** | 0.037** |
| | | (0.015) | (0.015) | (0.015) |
| Male | | −0.031*** | −0.032*** | −0.032*** |
| | | (0.008) | (0.008) | (0.008) |
| Married | | 0.000 | −0.0007 | −0.0007 |
| | | (0.010) | (0.011) | (0.011) |
| Per capita income | | 0.031** | 0.031** | 0.031** |
| | | (0.014) | (0.014) | (0.014) |
| Household size | | −0.304*** | −0.304*** | −0.304*** |
| | | (0.013) | (0.013) | (0.013) |
| Education | | 0.048*** | 0.047*** | 0.047*** |
| | | (0.010) | (0.011) | (0.011) |
| Professional/technical personnel | | 0.005 | 0.005 | 0.005 |
| | | (0.013) | (0.013) | (0.013) |
| Cadre | | | 0.013** | 0.013** |
| | | | (0.005) | (0.005) |
| *Provincial level variables* | | | | |
| Marketizaton index | | | | 0.228* |
| | | | | (0.117) |
| Average housing price | | | | −0.399** |
| | | | | (0.189) |
| Random effects | Variance component ($\chi^2$) | Variance component ($\chi^2$) | Variance component ($\chi^2$) | Variance component ($\chi^2$) |
| Average per capita living space (provincial level) | 0.059*** (567.63) | 0.065*** (754.82) | 0.065*** (760.61) | 0.053*** (653.25) |
| Level 1 effect | 0.35 | 0.26 | 0.26 | 0.26 |

*$p<0.1$, **$p<0.05$, ***$p<0.01$
Source: Authors' calculations

marketization tend to have larger dwellings than their counterparts residing in less marketized provinces. Average housing price at provincial level also has large and significant effects on housing inequality in terms of living space; the negative coefficient indicates higher average housing price constrains the housing demand of low-income individuals or households. From the perspective of proportion reduction in variance, when these two provincial-level variables are added, we find that variance at provincial level decreased from 0.023 to 0.017, equal to a proportion of explained variances of 26% at the provincial level.

### *10.4.4 Rural Model Estimates and Interpretations*

For rural areas, Model 1 presented in Table 10.5 indicates that the point estimate for the log-transformed per capita living space is about 3.7 square meters. It is higher than the point estimate for urban areas, which is consistent with the result obtained with the census data (Table 10.1). The value of intra-class coefficients in rural areas is 0.14, which means that about 14% of the total variance is between provinces. A chi-square test of the estimated between-province variance component is found to be highly significant (Chi-square=567.63, degree of freedom=23) and suggests that the significant variations between provinces can be explained by individual-level and provincial-level characteristics in rural models.

Model 2 (Table 10.5) examines whether household-level variables have effects on living space. Unlike urban models, age, education, and income have positive effects on living space in rural areas, supporting our socioeconomic status hypothesis. Female respondents have more living space than male respondents.

Since there is no *hukou* restriction in rural areas, *hukou* status variables are not considered here. However, to test the political power hypothesis, the cadre variable, which reflects political power, is added to Model 3 in Table 10.5. The result clearly indicates that rural cadres, like urban cadres, have advantages in housing consumption in terms of living space, which supports the political status hypothesis.

When provincial level variables are included in Model 4 (Table 10.5), regional variance decreases from 0.065 to 0.053, while individual level variance remains almost the same. This suggests that adding these two variables can explain 18% of total variance at the provincial level. Marketization index and average housing price variables show significant effects on living space. Rural households residing in provinces with higher degrees of marketization have more living space than those in less marketized provinces. The average housing price variable still plays a negative role on housing consumption in rural areas. The significance of both provincial-level variables shows the importance of macro-level housing market factors on rural housing consumption.

## Discussion and Conclusion

The introduction of market institutions has not only significantly changed the nature of the housing system but also greatly improved housing consumption for almost all social groups. While the 2010 aggregate census data allows for an assessment of overall housing conditions and inequality, the 2006 CGSS provides an opportunity to examine underlying mechanisms of inequality between households in terms of living space.

The analysis of the 2010 aggregate census data has demonstrated that rural-urban housing inequalities exist, as urban households have advantages over rural households for living in commodity housing units with better amenities. Rural

households tend to build their own houses, which are on average larger than urban housing units. At the aggregate level, households headed by people with higher education tend to have more living space, higher rates of purchased commodity homes, higher private home ownership, and to pay higher rents than households with a low-educated head. Moreover, households headed by non-manual occupational classes (cadres and officials, professionals, and clerks and related workers) tend to have more living space, higher rates of private home ownership, and, when they live in rental apartments, tend to pay higher rents than manual working classes.

These variations in measures of housing standards at the aggregate level are not always confirmed by the household-level multivariate analysis based on the 2006 CGSS, in which per capita living space is the single measure of housing inequality. Confined to this measure, education shows a significant effect on rural housing but not on urban housing. Professional and technical job holders tend to have more living space than non-professional and non-technical job holders. The combination of these two findings lends partial support to the socioeconomic status hypothesis. In the analysis of urban areas, *hukou* status variables show consistent effects on living space, which support the *hukou* status hypothesis, but state employees do not have a clear advantage over non-state employees in terms of living space, which rejects our work unit hypothesis. Finally, in both rural and urban analyses, cadres tend to have significantly more living space than non-cadres. This last finding supports the political power hypothesis.

These findings imply that China's housing market is a mixed system: while market mechanisms are not fully in charge, some non-market mechanisms are on the decline while other non-market mechanisms persist. More specifically, by market mechanism we mean that housing production and consumption function through prices determined by the forces of supply and demand. There are three main non-market mechanisms still working in the Chinese housing market. The first is the administrative mechanism: persons in higher political positions are still allocated larger and better-equipped homes. The second is the mechanism of the work unit which, even in the post-reform era, can either build subsidized housing for its employees, or sell them work-unit housing units at a discounted price. The third is the *hukou* mechanism, as those who have local *hukou* status are allowed to purchase homes in the housing market.

By introducing the marketization index and average housing price variables in the multi-level model, the results indicate that individuals in urban areas and in rural areas with a high level of marketization have more living space, which suggests that market mechanisms have been a driving force for housing inequality. In addition, average housing prices at provincial level also negatively influence individuals' living space. Given the high housing prices in the metropolitan areas such as Beijing and Shanghai, it is not difficult to understand that higher housing prices constrain individual demand for a larger home.

## References


Bian, Y. (1994). *Work and inequality in urban China*. Albany: State University of New York Press.

Bian, Y., & Liu, L. (2005). Shehui fen ceng, zhufang chanquan yu juzhu zhiliang (Social stratification, home ownership, and quality of living: Evidence from China' s fifth census). *Shehui kexue yanjiu (Sociological Research), 3,* 82–98. http://guancha.gmw.cn/uploadfile/2005-10/18/2005101885914479.PDF. Accessed 4 Dec 2013.

Bian, Y., & Logan, J. R. (1996). Market transition and the persistence of power: The changing stratification system in urban China. *American Sociological Review, 61,* 739–758.

Bian, Y., & Zhang, Z. (2002). Marketization and income distribution in urban China: 1988 and 1995. *Research on Social Stratification and Mobility, 19,* 377–415. http://iple.cass.cn/upload/2012/10/d20121017145636629.pdf. Accessed 4 Dec 2013.

Bian, Y., Logan, J. R., Lu, H., Pan, Y., & Guan, Y. (1997). 'Working units' and the commodification of housing: Observations on the transition to a market economy with Chinese characteristics. *Social Sciences in China, XVIII*(4), 28–35.

Cao, Y., & Nee, V. (1998). Comment: Controversies and evidence in the market transition debate. *American Journal of Sociology, 105*(4), 1175–1189.

Chan, K. W. (1994). *Cities with invisible walls: Reinterpreting urbanization in post-1949 China*. Hong Kong: Oxford University Press.

Cheng, T., & Selden, M. (1994). The origins and social consequences of China's hukou system. *The China Quarterly, 136,* 644–668.

Davis, D. S. (2000). Reconfiguring Shanghai households. In B. Entwisle & G. Henderson (Eds.), *Redrawing boundaries*. Berkeley: University of California Press.

Fang, G., Wang, X., & Zhu, H. (2010). *Zhongguo shichang hua zhishu: Ge diqu shichang hua xiangdui jincheng 2011 nian baogao (NERI Index of Marketization of China's Provinces 2011 Report)*. Beijing: Jingji kexue chubanshe.

He, X., & Xia, F. (2012). Zhongguo tizhi zhuanxing yu chengzhen jumin jiating caifu fenpei chaju (Institutional Reforms and Household Wealth Inequality). Jingji yanjiu (*Economic Studies*)*, 2,* 29–39. http://www.lepp.zju.edu.cn/upload/2012-05/12050913333606.pdf. Accessed 4 Dec 2013.

Hu, R. (2012). Shichang hua zhuanxing xia de zhufang bu pingdeng—jiyu CGSS2006 diaocha shuju (Housing inequality during the market transition: Evidence from the data of CGSS2006). *Zhongguo shehui kexue* (*Chinese Journal of Sociology)*, *32*(1), 126–151. http://www.sociology2010.cass.cn/upload/2012/10/d20121011163455449.pdf. Accessed 4 Dec 2013.

Huang, Y. (2004). Housing stock, housing market and government behavior: A case study of three cities in China. *Environment and Planning A, 36*(1), 45–68.

Huang, Y. (2005). From work-unit compounds to gated communities: Housing inequality and residential segregation in transitional Beijing. In L. Ma & F. Wu (Eds.), *Restructuring the Chinese city: Changing economy, society and space*. London: Routledge.

Huang, Y., & Clark, W.A. (2002). Housing tenure choice in transitional urban China: A multilevel analysis. *Urban Studies, 39,* 7–32.

Huang, Y., & Jiang, L. (2009). Housing inequality in transitional Beijing. *International Journal of Urban and Regional Research, 33*(4), 936–956.

HWI (2010). Housing Wealth Inequality. *Economics Paperi, 1*(6), 7–38. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6355/1775062.pdf. Accessed 26 Nov 2013.

Li, S. (2000a). The housing market and tenure decisions in Chinese cities: A multivariate analysis of the case of Guangzhou. *Housing studies, 15*(2), 213–236.

Li, S. (2000b). Housing consumption in urban China: A comparative study of Beijing and Guangzhou. *Environment and Planning A, 32*(6), 1115–1134.

Li, S. (2003). Housing tenure and residential mobility in urban China—A study of commodity housing development in Beijing and Guangzhou. *Urban Affairs Review, 38*(4), 510–534.

Li, S., & Li., L. (2006). Life course and housing tenure change in urban China: A study of Guangzhou. *Housing Studies, 21*(5), 653–670.
Logan, J. R., Bian, Y. & Bian, F. (1999). Housing inequality in urban China in the 1990s. *International Journal of Urban and Regional Research, 23*(1)*,* 7–25.
Logan, J. R., Fang, Y., & Zhang, Z. (2009). Access to housing in urban China. *International Journal of Urban and Regional Research, 33*(4), 915–935.
NBS (1998). *National Bureau of Statistics of China. China statistical yearbook*. Beijing: China Statistical Press.
Nee, V. (1989). A theory of market transition: From redistribution to markets in state socialism. *American Sociological Review, 54,* 663–681.
Nee, V. (1991). Social inequalities in reforming state socialism: Between redistribution and markets in China. *American Sociological Review, 56,* 267–282.
Nee, V. (1996). The emergence of a market society: Changing mechanisms of stratification in China. *American Sociological Review, 101,* 908–949.
Pan, Z. (2004). Housing quality of Communist party members in urban China: A comparative study. *Housing Studies, 19*(2), 193–205.
PCO (2012) Population Census Office, *Zhongguo 2010 nian renkou pucha ziliao* (Tabulation of the 2010 population census of the People's Republic of China). Beijing: Zhongguo tongji chubanshe.
Rona-Tas, A. (1994). The first shall be the last? Entrepreneurship and communist cadres in the transition from state socialism. *American Journal of Sociology, 100,* 40–49.
Szelenyi, I. (1978). Social inequalities in state socialist redistributive economics: Dilemmas for social policy in contemporary socialist societies in Eastern Europe. *International Journal of Comparative Sociology, 19,* 63–87.
Szelenyi, I., & Kostello, E. (1996). The market transition debate: Toward a synthesis? *American Journal of Sociology, 101,* 1082–1096.
Walder, A. G. (1992). Property rights and stratification in socialist redistributive economies. *American Sociological Review, 57,* 524–539.
Walder, A. G. (2003). Elite opportunity in transitional economies. *American Sociological Review, 68,* 899–916
Wang, Y., & Murie, A. (2000). Social and spatial implications of housing reform in China. *International Journal of Urban and Regional Research, 24*(2), 397–417.
Whyte, M. K., & Parish, W. L. (1984). *Urban life in contemporary China*. Chicago: University of Chicago Press.
Wu, X. (2002). Work units and income inequality: The effect of market transition in urban China. *Social Forces, 80*(3), 1069–1099.
Xie, Y., & Hannum, E. (1996). Regional variation in earning inequality in reform-era urban China. *American Journal of Sociology, 101,* 950–992.
Zhou, X. (2000). Economic transformation and income inequality in urban China: Evidence from a panel data. *American Journal of Sociology, 105*(4), 1135–1174.

# Part III
# Changing Age Structure, Labour Force and the Older Population

# Chapter 11
# Mortality in China: Data Sources, Trends and Patterns

**Zhongwei Zhao, Wei Chen, Jiaying Zhao and Xianling Zhang**

## 11.1 Introduction

Mortality in historical China was high, and this remained the case throughout the first half of the twentieth century (Barclay et al. 1976; Zhao 1997). Although signs of mortality improvement were recorded in some cities (Campbell 1997), life expectancy at birth at the national level was probably below 35 years during this period (Barclay et al. 1976; Banister 1987).

Remarkable changes took place after the founding of the People's Republic of China in 1949. While China experienced numerous political campaigns and social upheavals in the next three decades, mortality nonetheless declined rapidly, except during the Great Famine in 1959–1961. In fact, for a country with low levels of income and economic development (Caldwell 1986), China made very impressive progress in lowering mortality, and life expectancy increased by 30 years or more between 1950 and 1980. Since the early 1980s, China has undergone profound economic and social reform. While these changes have been accompanied by some negative developments, such as the collapse of the old social welfare and health care systems, along with increasing inequality in income and wealth (Zhao 2006), the population as a whole has avoided a significant deterioration in health, and longevity has increased. China's life expectancy has now reached 75 years.

While China has continued to make impressive progress in lowering mortality, there are few detailed studies of how this has occurred, of the major characteristics of China's mortality decline in comparison to those of many other countries, and of the main lessons learned. This is partly because mortality studies in China have long been overshadowed by those on fertility; lack of knowledge and limited accessibility of mortality data are other contributing factors.

This chapter aims to fill some of these knowledge gaps. It starts with a systematic review of China's major mortality data collected by different government departments, along with the methods and purposes of data collection. It then examines

Z. Zhao (✉) . W. Chen . J. Zhao . X. Zhang
Australian National University, Canberra, Australia
e-mail: zhongwei.zhao@anu.edu.au

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_11, © Springer Science+Business Media Dordrecht 2014

mortality data gathered from various sources, their differences and similarities. On the basis of this analysis, this chapter further examines China's recent mortality decline, the differentials between urban and rural areas, and changes in major causes of death. The chapter ends with some concluding remarks.

## 11.2 China's Major Sources of Mortality Data

In comparison to studies on fertility, mortality studies have been limited in China. This is partly because mortality data are often less widely published or are not readily available. This section describes China's major mortality data, especially their collection procedures, coverage, and other main characteristics.

### *11.2.1 Mortality Data Collected by Censuses or Nationwide Sample Surveys*

*National Censuses and Inter-Censal Population Surveys by the National Bureau of Statistics*

China has conducted six population censuses—in 1953, 1964, 1982, 1990, 2000 and 2010—and three inter-censal 1% population sample surveys—in 1987, 1995 and 2005– under the supervision of the National Bureau of Statistics of China (NBS) (See Inset 2.1 p. 16). Among other information, the censuses and inter-censal surveys collect data on mortality, generally by enumerating people who died during the preceding year or 18 months. In doing so, they usually record the age, sex, ethnicity, marital status, educational level, occupation and other information about the deceased. Mortality data collected through censuses and inter-censal sample surveys include all or most of the deaths that occurred during the reference period, and therefore provide good coverage of the national population. But such mortality data are only collected every few years. Furthermore, because these mortality data are collected through a very large operation, they generally contain limited information. In recent years especially, the data collected have tended to be of lower quality than data obtained via small surveys or other data collection methods. In addition, variations in quality tend to be more notable than for data obtained through smaller operations.

*Annual Population Change Surveys by the National Bureau of Statistics*

To collect demographic data, the National Bureau of Statistics of China (NBS) conducts annual population change sample surveys (APCSS) in the years when there is no census or inter-censal survey. The APCSS started in the early 1980s. They generally sample around one per thousand of the national population. The information collected is similar to that gathered by the census or inter-censal population survey. The APCSS also collect data on mortality. On the basis of the survey results, the NBS publishes tabulated mortality data each year in China's Popula-

tion Yearbooks (NBSa 1985–2012, annual). In recent years, similar data have been published by some provinces as well. Mortality data obtained through the APCSS also have a good coverage for the national population, they are very up-to-date and their quality is relatively high. However, unit records of the APCSS are difficult to access. Tabulated mortality data are limited and lacking in detail. Largely for these reasons, mortality data collected through the APCSS are rarely used in academic research.

*Nationwide Retrospective Surveys on Causes of Death Conducted by the Ministry of Health*

The Ministry of Health (MOH) has undertaken three national retrospective surveys on causes of death in recent decades. The main purposes of these surveys were to study China's mortality patterns and to determine causes of death and their changes. The three surveys were conducted in the mid-1970s, early 1990s and 2006, respectively. They intended to enumerate all deaths that occurred in the study periods among the entire national population or a large fraction of it. The surveys recorded causes of death and their quality was relatively high (Banister and Preston 1981; Rong et al. 1981; Chen 2008; Zhao et al. 2012). These surveys provide very valuable information for the study of mortality, causes of death, and geographic patterns of diseases, especially cancers, in the Chinese population. But these data have only been used in a quite small number of studies.

*National Fertility Sample Surveys by National Population and Family Planning Commission*

In recent three decades, China's National Population and Family Planning Commission (NPFPC, which merged with Ministry of Health and formed National Health and Family Planning Commission in 2013) has organized six nationwide fertility surveys, in 1982, 1988, 1991, 1997, 2001 and 2006. These surveys generally focused on fertility and family planning, but they also collected some information on mortality, especially infant and child mortality. These results proved very useful for the study of mortality. For example, the 1988 fertility survey recorded the survival status of all children born to women aged 15–57 at the time of the survey. They have become a precious data source for the study of mortality changes, especially changes in infant, child and young adult mortality between the mid-1940s and the late 1980s. Most of these surveys, those conducted in earlier times especially, were well organized, and the quality of their mortality data was high or very high.

### *11.2.2 Mortality Data Collected from Various Surveillance Systems*

*Mortality Data Collected from the Nationwide Vital Registration System Set Up by MOH*

To collect detailed epidemiological and mortality data, the Ministry of Health (MOH) established a vital registration system throughout the country in 1987. It

covered about 8 % of the national population, around 110 million people (Rao et al. 2005). The registration system collects detailed information on age, sex, and cause of death for each deceased person. These data have often been tabulated for large, medium-sized, and small cities and for four types of rural areas with different levels of development. However, the registration sites were not selected randomly, and cover a relatively high proportion of people living in urban and better-off areas of eastern China (Rao et al. 2005; Yang et al. 2005). Detailed tabulation results collected through the system are usually presented in the internally circulated statistical report, although some of these statistics, for example distribution of major causes of deaths, and cause-specific mortality, have also been published in China's Health Statistical Yearbook in recent years (MOHb 1990–2012, annual).

*Mortality Data Collected from Disease Surveillance Points (DSP) Set up by MOH*

In addition to its vital registration system, the MOH also gradually established a system of Disease Surveillance Points (DSP) from the 1980s, and a nationwide system comprising 145 DSPs selected by multi-level stratified sampling procedures was set up in 1990 (MOHa 1991–2008, annual). The system, which covered about 1 % of the national population or around 10 million people, collected detailed epidemiological and mortality information from each surveillance point (Rao et al. 2005; Yang et al. 2008). Over the period 1991–2000, a summary report was published each year. No report was issued in 2001 and 2002, but in 2003, the DSP system resumed its activities, and the total number of DSPs also increased to 161, each covering a population of 300,000–700,000 people (Yang et al. 2008). Some of their recent reports can be accessed online.

*Mortality Data Collected from National Child and Maternal Mortality Surveillance Points by MOH*

In 1989, the MOH set up its Maternal Surveillance Points system, which consisted of 247 randomly-selected county-level surveillance units. From 1991, its Child Mortality Surveillance system also began collecting data from 81 county-level surveillance units, which were chosen using a stratified sampling method. In 1996, these two systems were integrated and formed a nationwide system of Child and Maternal Mortality Surveillance Points. The integrated system was established in 116 county-level administrative areas. In 2006, the system was further expanded to 336 counties or urban districts, which had a population of 140 million. Data gathered by the National Child and Maternal Mortality Surveillance Points system were obtained mainly from hospitals, though it was claimed that the systems recorded all child and maternal deaths within the areas under the surveillance from 1996. Furthermore, the system recorded only maternal deaths of women with household registration in the surveillance areas, and deaths of children whose guardian had been living in surveillance areas for more than one year. Major statistics obtained from the surveillance system include the infant mortality rates, under-5 child mortality rates, maternal mortality rates, and major causes of death. The quality of these data is relatively high.

### *11.2.3 Mortality Data Collected from Household Registers and Death Certificates*

*Death Statistics Obtained Through the Household Registration System Managed by the Ministry of Public Security (MPS)*

China's National People's Congress passed the legislation on household registration in 1958, and a nationwide system was gradually set in place. Under this legislation, each individual must be registered in the household registration system, and after death, his or her registration must be cancelled within a month. However, the quality of such death records varies considerably over time and space. Using mortality records and population data gathered from household registers, MPS calculates and releases crude death rates and other related mortality statistics. Such statistics were China's most important source of mortality data, and often the only one, before the 1980s. Theoretically, the household registration data can be used to produce very detailed mortality statistics, and they are an important data source for mortality studies. But although access has been facilitated by recent digitization, the household registration data remain one of the least used data sources in demographic research.

*Mortality Data Derived from Death Certificates Issued by Health and Public Security Authorities*

Another potentially very important data source for mortality studies is the death certificate issued by health and public security authorities. Like in many other countries, when a person dies, a death certificate must be issued by these authorities before his or her household registration can be cancelled and the body can be buried or cremated. These death certificates are forwarded to public health agencies or other government departments, in particular the Ministry of Civil Affairs. In Shanghai and some other Chinese cities, for example, these death certificates are forwarded to and kept in the Centre for Disease Control and Prevention. Since these certificates provide detailed information about the deceased, including major diseases that led to the death, they can be used to produce detailed analysis and statistics of mortality and causes of death. The quality of the death certificates varies greatly in different areas. This is largely due to difficulties in certifying causes of death and to variations in the knowledge and experience of people who are responsible for issuing the certificates.

## 11.3 Differences in the Quality of China's Major Mortality Data Sources

Because China's mortality data are collected by different government agencies, for different purposes and through different operations, there are substantial differences in their quality and content. Understanding these differences is crucial for interpreting and using mortality statistics from different data sources. This section

**Table 11.1** Life expectancies computed from different data sources

| | Census, inter-censal sample survey | | Annual population change sample surveys | | MOH disease surveillance point system | | MOH vital registration system | |
|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F |
| 1989–90 | 68.35 | 71.91 | | | | | | |
| 1991 | | | | | 68.55 | 72.06 | | |
| 1992 | | | | | 68.84 | 72.34 | | |
| 1993 | | | | | 68.52 | 73.80 | | |
| 1994 | | | 68.81 | 71.63 | 70.15 | 74.48 | | |
| 1995 | 68.99 | 72.74 | 69.09 | 72.87 | 69.94 | 74.15 | | |
| 1996 | | | 68.84 | 73.11 | 70.21 | 74.06 | | |
| 1997 | | | 69.10 | 72.82 | 70.36 | 74.76 | | |
| 1998 | | | 69.69 | 73.84 | 68.80 (71.34) | 72.05 (75.54) | | |
| 1999 | | | 70.72 | 74.44 | 72.24 | 76.43 | | |
| 2000 | 70.73 | 74.43 | 70.85 | 75.04 | 72.34 | 76.60 | | |
| 2001 | | | 71.64 | 76.03 | | | | |
| 2002 | | | 71.47 | 76.08 | | | | |
| 2003 | | | 72.56 | 76.47 | | | 72.95 | 77.04 |
| 2004 | | | 73.17 | 77.65 | 72.49 | 77.68 | | |
| 2005 | 73.53 | 78.36 | 74.21 | 78.43 | | | 74.66 | 78.64 |
| 2006 | | | 75.60 | 80.00 | | | 75.60 | 80.79 |
| 2007 | | | 75.82 | 79.91 | | | 74.94 | 80.52 |
| 2008 | | | 75.11 | 79.74 | 73.89 | 79.15 | 75.42 | 80.82 |
| 2009 | | | 76.97 | 81.53 | | | 75.05 | 80.43 |
| 2010 | 75.72 | 80.54 | 76.03 | 81.10 | | | 74.63 | 79.94 |
| 2011 | | | 75.17 | 80.66 | | | | |

The results for 2000, 2005 and 2010 are the average of adjacent years. The DSP data for 2004 were collected by the 2004–2005 Third National Retrospective Survey on Causes of Death. For 2008, the DSP has two reports, the other sets of life expectancies were 74.06 and 79.69 years. For 2000, 2004, and 2008 the DSP results were computed from reported age-specific death rates. For 1998, the first sets of DSP results were reported by MOH publication, and the second set was computed by the authors using reported age-specific death rates. Other statistics are obtained from Huang and Liu (1995) or computed by the authors

Sources: PCO (1993, 2002, 2012); NBSa (1985–2012, annual); NBSb (2007); Chen (2008); MOHa (1991–2008, annual); MOHb (1990–2012, annual); Huang and Liu (1995)

analyses available mortality data and addresses some of these issues. Since some published statistics have already been adjusted by the data collection agencies, differences shown in the following discussion may not accurately represent the actual differences between the related data sources.

### *11.3.1 Levels of Life Expectancy*

Life expectancy at birth is one of the most commonly used summary indicators of mortality. Table 11.1 shows life expectancies for recent years, recorded or reported

by different data sources. Most of the listed life expectancies are unadjusted or have been computed directly from recorded age-specific mortality rates obtained from related data sources. They are more effective in highlighting the inconsistencies in registration practices.

In general, the life expectancies obtained from different data sources are fairly similar, but those from censuses or 1 % population sample surveys tend to be slightly lower. This is probably because the Chinese government usually updates the household registration in these years in order to improve the quality of the censuses or the population sample surveys. For other years, the life expectancies from other three data sources are largely consistent. The differences between them are around one year, though mortality reported by the NBS is lower than that reported by the MOH in the last couple of years. This is also attributable to the fact that they were all based on the household registration, especially its registration of death. However, despite these broad similarities and overall consistency, mortality records collected by these data sources are all affected by under-registration problems. There are some notable variations in the patterns of under-registration between them, as we shall see in the following discussion.

### *11.3.2 Infant and Child Mortality*

Infant and child mortality rates for recent years can also be provided by most data sources discussed in Section 11.2, although some of the data, for example, those collected through household registration, have rarely been used to study infant and child mortality. Previous studies suggested that mortality data collected through both the Disease Surveillance Point system and the Vital Registration system of the MOH are incomplete (Rao et al. 2005). For example, considerable underreporting was found at all ages in the data gathered by the DSP system in 1998. The under-enumeration rate for children who died before age 5 was 21.6 %, although the situation seemed to have improved by 2004–2005 according to the checks made by comparing DSP data with the results of the third national retrospective mortality survey (Zhao 2007). Under-enumeration of infant or early childhood mortality was also evident in the APCSS conducted by the NBS.

We compared infant and child mortality rates obtained from four data sources. In general, infant mortality rates computed directly from the data collected through the APCSS and DSP system or obtained from their reports are lower than reported by NBS and MOH. This could arise from the fact that some of the mortality rates reported by NBS or MOH have already been adjusted. Comparison of the two sets of government reported rates (see Fig. 11.1) show that before 2000, infant mortality rates published by the two government departments were reasonably close. Since then, the infant mortality rates reported by MOH have been consistently higher than those from the NBS. For child mortality at ages 1–4, the probability of death computed from the MOH data is slightly higher than that obtained from the NBS before 2002. Since 2003, the two sets of probabilities of death have been very close.

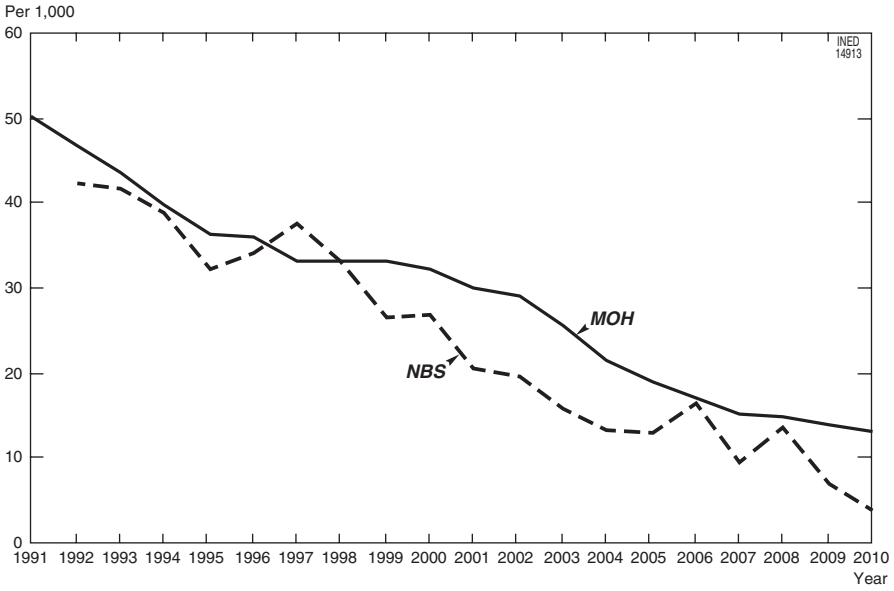



**Fig. 11.1** Infant mortality rates reported by *NBS* and *MOH*, 1991–2010 (Source: NBSa 1992–2011, annual; MOHb 2011)

### *11.3.3 Mortality Levels in Other Age Groups*

More detailed comparison shows that differences in age-specific mortality rates (ASMR) obtained from different data sources are more complex than those indicated by life expectancies at birth. When ASMRs recorded by the census, 1 % population sample survey and those from the APCSS are compared (see Table 11.2), mortality rates obtained from censuses and 1 % population sample surveys tend to be higher for the over-50s, especially those over age 65, in comparison with those computed from the annual surveys. But the patterns of differences are less clear among people aged 5–50, perhaps because in the years when the census or intra-censal survey was conducted, the Chinese government often updated the household registration. This generally reduced the number of already deceased person who were still recorded in the household registration (mainly old people) and thereby improved the quality of death records collected by the census and intra-censal population survey.

When ASMRs reported by the NBS (mainly mortality rates obtained from recent APCSS) are compared with those released by MOH, male mortality rates reported by the NBS tend to be higher for younger age groups, but they are lower for age groups 40 and over. For the female population, similar patterns are also observed among people under aged 40, while the patterns of differences are less clear above this age. Furthermore, in 2010, female ASMRs reported by the NBS were all higher than those reported by MOH, except among the 1–4, 45–49 and 80–84 age groups.

**Table 11.2** ASMRs recorded by recent censuses, intra-censal population sample surveys and annual population change surveys

| Age | 2000 | | 2005 | | 2010 | |
|---|---|---|---|---|---|---|
| | Census | Annual survey | Intra-censal survey | Annual survey | Census | Annual survey |
| 0 | 26.90 | 25.27 | 12.82 | 13.94 | 3.82 | 8.65 |
| 1–4 | 1.48 | 1.55 | 0.83 | 0.87 | 0.64 | 0.62 |
| 5–9 | 0.55 | 0.52 | 0.42 | 0.45 | 0.30 | 0.37 |
| 10–14 | 0.42 | 0.39 | 0.39 | 0.39 | 0.30 | 0.28 |
| 15–19 | 0.63 | 0.78 | 0.66 | 0.58 | 0.39 | 0.35 |
| 20–24 | 0.97 | 1.15 | 0.87 | 0.88 | 0.50 | 0.47 |
| 25–29 | 1.11 | 1.23 | 1.00 | 0.95 | 0.61 | 0.62 |
| 30–34 | 1.33 | 1.44 | 1.25 | 1.18 | 0.81 | 0.93 |
| 35–39 | 1.68 | 1.71 | 1.61 | 1.48 | 1.16 | 1.24 |
| 40–44 | 2.40 | 2.36 | 2.13 | 2.18 | 1.76 | 1.70 |
| 45–49 | 3.47 | 3.48 | 3.27 | 3.01 | 2.61 | 2.58 |
| 50–54 | 5.49 | 5.00 | 4.57 | 4.35 | 4.18 | 4.47 |
| 55–59 | 8.68 | 8.32 | 7.06 | 6.93 | 6.19 | 5.84 |
| 60–64 | 14.79 | 15.30 | 11.69 | 11.01 | 10.31 | 9.60 |
| 65–69 | 24.37 | 24.54 | 19.48 | 19.08 | 17.21 | 16.79 |
| 70–74 | 42.29 | 40.49 | 32.53 | 32.58 | 30.64 | 27.01 |
| 75–79 | 66.49 | 62.86 | 53.56 | 52.18 | 49.52 | 46.99 |
| 80–84 | 111.68 | 101.05 | 86.31 | 81.91 | 84.81 | 74.84 |
| 85–89 | 160.30 | 147.52 | 131.66 | 115.68 | 127.43 | 108.05 |
| 90+ | 250.80 | 225.32 | 213.29 | 199.89 | 200.87 | 171.72 |

The ASMRs for the Annual Population Change Survey were the averages computed from ASMRs for adjacent years

Sources: PCO (2002, 2012); NBSa (2000–2010, annual); NBSb (2007)

### *11.3.4 Causes of Death*

Data on causes of death for the national population are obtained from both the DSP and the Vital Registration system set up by the MOH. In both systems, causes of death are certified by physicians when a person dies in hospital. For deaths that occur at home, the DSP system conducts verbal autopsy interviews to verify cause of death, whereas the Vital Registration system sometimes also relies on the information provided by the family (Rao et al. 2005). For this reason, the cause of death recorded by the DSP system is likely to be more reliable than that recorded by the Vital Registration system.

Studies also suggest that the quality of recorded causes of death provided by the DSP system is generally good, although caution is required when drawing conclusions about some chronic diseases such as chronic obstructive pulmonary disease, diabetes and ischaemic heart disease (Yang et al. 2006, 2008; Rao et al. 2007). Available studies also show that the proportion of deaths assigned to the group of ill-defined categories (certification and coding procedures are considered satisfactory when it is below 10%) was fairly low in data on causes of death provided by the DSP system (2.5%) and the Vital Registration system (5%) during 1995–99. The proportion has been lower in recent years (Rao et al. 2005).

## 11.4 Major Mortality Changes in Recent Decades

The above comparison shows that most of China's mortality data are affected by under-enumeration problems and often require some adjustments before they can be used to indicate the actual mortality level in the country. In this section, however, our discussion will be based mainly on statistics published by the NBS and MOH without making our own adjustments. This is because such adjustments require detailed information (for example, under-registration of deaths in major age groups), which is not readily available. Furthermore, even if such adjustments had been made, they would probably be similar to those made by the relevant government agencies. Most of the government adjusted or released data are reliable enough for discussion of the following issues.

### *11.4.1 China's Recent Mortality Changes and Increase in Life Expectancy at Birth*

As stated earlier, mortality was high throughout Chinese history. But this changed notably after the founding of the People's Republic. According to the data compiled by the Population Information and Research Centre of China, the life expectancy for the Chinese population rose to 56 years in 1957. While this increase was interrupted by the Great Famine of 1958–1961, China's life expectancy further increased to 64 years in the early 1970s and to 68 years in 1981 (Huang and Liu 1995). Some studies suggest that actual mortality might have been slightly higher because of the under-registration of deaths. Even based on a lower estimate, China's life expectancy at birth was still about 50 years in 1957, 61 in 1970, and 65 in 1981 (Banister 1987), rising by 30 years during the three decades from 1950. This was a great achievement. Together with the Sri Lanka, Costa Rica and Kerala of India, China was widely regarded as being on the "routes to low mortality in poor countries" (Caldwell 1986).

To examine mortality changes in China in recent decades, life expectancies estimated by the NBS, United Nations and Banister and her colleagues are compared in Figs. 11.2a and b for male and female populations. There are two major differences between the life expectancies drawn from these sources. First, before the 1970s, the differences between them were larger than for later decades. Second, the estimates made by Banister were notably lower than those from the two other sources, especially for the late 1970s and early 1980s. In other respects, the three sets of life expectancies were fairly similar, and their differences were very small after the mid-1980s.

China's mortality has declined further since the early 1980s. According to the NBS, the life expectancy for the national population increased to 68.6 years, 71.4 years and 74.8 years in 1990, 2000 and 2010, respectively (NBSa 2012). These figures are close to those estimated by the UN Population Division in their world population prospects (UN-WPP 2012). Depending on the source used for life expectancy

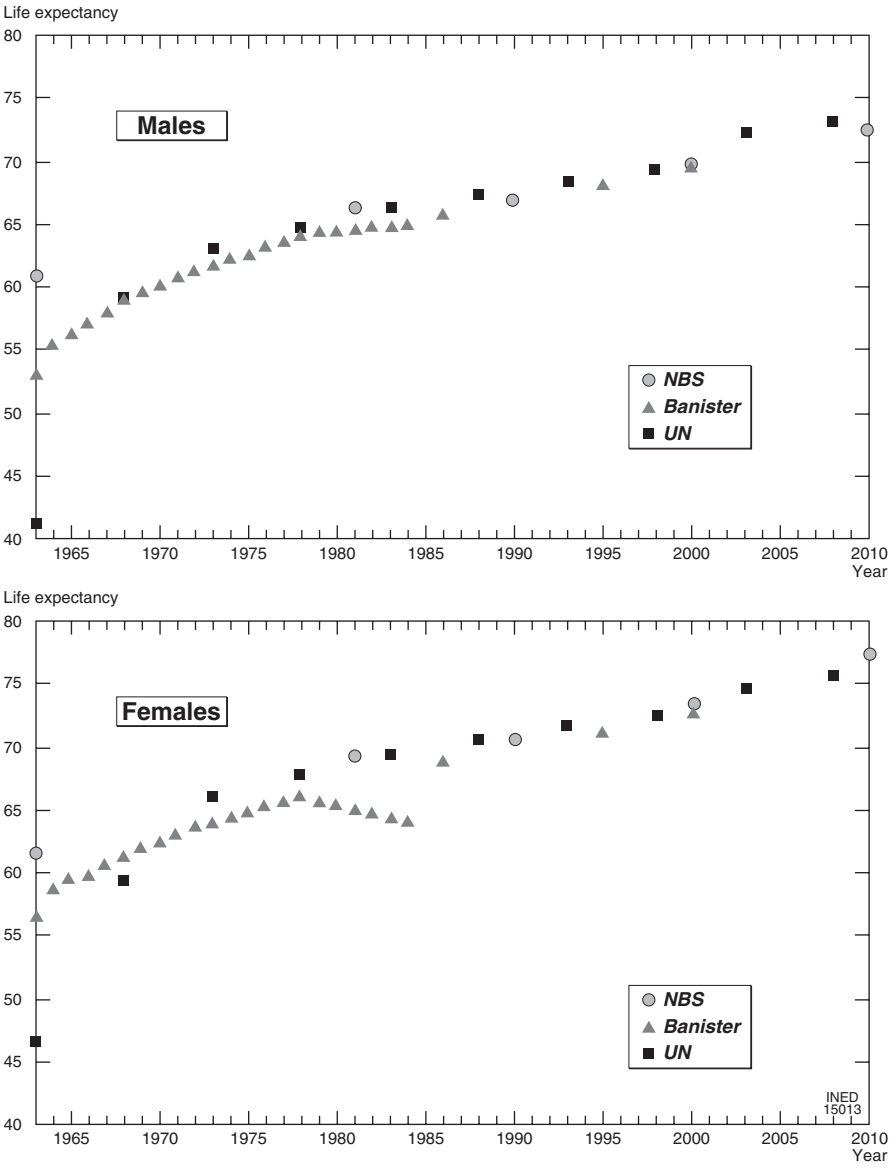



**Fig. 11.2** Changes in male and female life expectancy at birth. Banister and Hill's estimates for 1982–1990 are shown as for 1986; for 1990–2000 as for 1995; for 1999–2000 as for 2000; United Nations estimates are based on 5-year periods, shown as mid-year data (e.g. 2005–2010 shown as for 2008) (Sources: NBSa 1985–2012, annual; Banister 1987; Banister and Hill 2004; UN-WPP 2012)

in 1981, we can draw a slightly different conclusion about China's mortality decline in the 1980s. The figures released by the NBS suggest that in comparison with the previous three decades, China's mortality reduction has been slow in the past 30

years. This was more notable in the 1980s and 1990s, when the improvement in life expectancy was also slower than that observed in Japan and Taiwan when they were experiencing a similar increase in life expectancy. Since 2000, China's life expectancy has increased more rapidly, rising by 3.4 years in the first decade of the twenty-first century to reach 75 years today. It is about 9 years higher than the average of other less developed countries and only about 3 years lower than the average of the more developed countries in the world (UN-WPP 2012).

While there may be some uncertainty about these estimates, they are largely consistent with the social and economic changes that took place during this period. In the late 1970s, China started its economic reform. This led to many significant changes and a rapid economic growth, but it also had some negative impacts. In the 1980s and 1990s, unemployment increased, the old medical care system collapsed in many areas, the commercialization and marketization of health services greatly increased their cost, and increasing income inequality made it difficult for poor people to get medical treatment. These changes tended to slow down improvement in health care and services (Zhao 2006). Indeed, there is evidence that mortality improvement slowed down or stagnated in Shanghai in the mid-1990s (Zhao 2013).

The Chinese government is aware of these problems and action has been taken to address them. In addition to the very successful poverty alleviation programme, significant efforts have been made to re-establish the nationwide health care system. For example, following the collapse of the old rural medical care insurance system, about 80 % of China's rural population had no health insurance coverage in 2003. To turn round this trend, a new rural cooperative health care system was set up in that year. It now provides health insurance and care to about 95 % of China's rural population. As a result, there has also been notable change in the composition of health expenditures, and the proportion paid by individuals has been declining since the beginning of the twenty-first century. These, along with the further improvement in standards of living and the development of medical science and technologies have made a major contribution to China's recent mortality decline.

### *11.4.2 Changes in Major Causes of Death*

Four decades ago, Omran (1971) developed the epidemiological transition theory. He suggested that long-term mortality decline has been accompanied by changes in major causes of deaths. Analysing recent changes in causes of death is a very useful way to improve our understanding of China's recent mortality changes and their future trends.

Examination of changes in causes of deaths can sometimes be considerably affected by changes in classifications. In Table 11.3, for example, a sudden increase in the proportion of deaths from respiratory diseases was recorded in both urban and rural areas in 1990. This is largely due to the fact that in the early 1990s and also before that time, a large number of deaths were reportedly caused by chronic pulmonary heart diseases. But China's health authorities decided that those who had been reported as dying of these diseases should be classified more accurately as

**Table 11.3** Proportions of deaths from five major causes in selected years

| Cause of death | 1957 | 1963 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| *Urban* | | | | | | | | | | |
| Malignant tumours | | 8.6 | 18.8 | 19.6 | 20.3 | 21.9 | 21.9 | 24.4 | 22.7 | 26.3 |
| Cerebrovascular diseases | | 6.9 | 21.6 | 23.4 | 21.0 | 20.8 | 22.2 | 21.3 | 20.2 | 20.2 |
| Heart diseases | 6.6 | 6.7 | 19.5 | 22.9 | 23.4 | 15.8 | 15.3 | 17.7 | 17.9 | 20.9 |
| Respiratory diseases | 16.9 | 12.0 | 10.8 | 9.0 | 9.1 | 15.8 | 15.7 | 13.3 | 12.6 | 11.0 |
| Injury and poisoning | | | | 5.0 | 5.8 | 6.9 | 6.9 | 5.9 | 8.3 | 6.2 |
| Digestive diseases | 7.3 | | 4.9 | | | | | | | |
| Pulmonary tuberculosis | 7.5 | 6.8 | | | | | | | | |
| Infectious diseases | 7.9 | | | | | | | | | |
| Subtotal | 46.2 | 41.0 | 75.6 | 79.9 | 79.6 | 81.2 | 82.0 | 82.6 | 81.7 | 84.6 |
| *Rural* | | | | | | | | | | |
| Malignant tumours | | | 17.5 | 14.7 | 15.2 | 17.5 | 17.3 | 18.3 | 20.1 | 23.1 |
| Cerebrovascular diseases | | | 13.5 | 17.1 | 15.6 | 16.2 | 16.7 | 18.7 | 21.2 | 23.4 |
| Heart diseases | | | 18.0 | 25.8 | 25.5 | 10.8 | 9.6 | 11.9 | 11.8 | 17.9 |
| Respiratory diseases | | | 12.9 | 12.0 | 12.3 | 24.8 | 26.2 | 23.1 | 23.4 | 14.2 |
| Injury and poisoning | | | | | 7.2 | 10.7 | 11.3 | 10.6 | 8.5 | 8.5 |
| Digestive diseases | | | 6.8 | 5.3 | | | | | | |
| Pulmonary tuberculosis | | | | | | | | | | |
| Infectious diseases | | | | | | | | | | |
| Subtotal | | | 68.7 | 74.9 | 75.8 | 80.0 | 81.1 | 82.6 | 84.9 | 87.0 |

Sources: MOHa (vari ousyears, annual); MOHb (various years, annual)

having died of chronic obstructive pulmonary diseases (MOHa 1991). The deaths were reclassified accordingly, and the practice was continued thereafter. Since a similar adjustment was not made to the statistics of earlier years, this resulted in an apparent sudden increase in the proportion of deaths from respiratory diseases and a reduction in the proportion of deaths from heart diseases in 1990. After this distortion has been taken into consideration, the following conclusions can be reached about changes in the cause structure of mortality.

Evidence indicates that before the mid-1950s, a large proportion of deaths were caused by respiratory diseases, infectious diseases and digestive diseases in some Chinese populations. In Beijing, for example, these three types of diseases accounted for nearly two-thirds of recorded deaths in 1949 (Li and Qiu 1987), which was

similar to the proportion observed in the pre-epidemiologic-transition society. The proportion of deaths from these diseases had already decreased in the first half of the 1950s, but they were still among the top five major causes of death in 1957, even in urban areas. The patterns in rural areas were probably the same, although no detailed data were available before the mid-1970s. After adjusting for the distortion associated with changes in the classification of causes of death, the proportion of deaths due to respiratory diseases has shown a notable decline, especially after the mid-1990s. However, the proportion of deaths attributable to malignant tumours has been on the rise, while deaths caused by cerebrovascular and heart diseases have also increased slightly. In the 1990s, the proportions of deaths due to injury and poisoning increased in both rural and urban areas, but they showed some decline in 2010. As far as the major causes of death are concerned, China has now completed the classic epidemiological transition. Degenerative diseases such as malignant tumours, cerebrovascular and heart diseases are now responsible for around two-thirds of deaths in both urban and rural areas. Malignant tumours are now the leading cause of death in urban areas, but remain slightly behind cerebrovascular diseases in rural areas.

The cause structure of mortality is closely related to the level of disease-specific mortality rates. Again after taking account of the distortion associated with changes in the classification of causes of death in the early 1990s, it is interesting to see that death rates from respiratory diseases, digestive diseases, pulmonary tuberculosis and infectious diseases have fallen significantly in recent decades, as shown in Table 11.4. Death rates from injury and poisoning increased notably up to the 1990s in both urban and rural areas, but they have shown some decrease in the past 15 years. On the other hand, death rates from malignant tumours, cerebrovascular diseases and heart diseases have all risen considerably in rural areas in recent years. There is no sign that these trends will stop soon. In urban areas, changes in death rates from malignant tumours and heart diseases have shown similar patterns, while changes in death rates from cerebrovascular diseases have been less clear in recent decades. These results indicate that increasing mortality from malignant tumours, heart diseases and cerebrovascular diseases will present a major health challenge for China in the years to come.

### *11.4.3 Mortality Differentials Across Regions*

Mortality levels vary widely across China, which is not surprising for country with a population of around 1.4 billion. The NBS and MOH both collect and release mortality statistics by geographic regions, urban and rural areas, and occasionally by the level of social and economic development. The data collected by them are not always very consistent, however. They are also affected by under-registration. Nonetheless, these results can still shed light on variations in mortality across different regions.

A comparison of life expectancies computed for all provinces using data from three recent censuses shows that lower mortality has been widely observed in the eastern part of the country, and higher mortality in the west. Mortality in the central

**Table 11.4** Disease-specific death rates (per 100,000) in urban and rural areas

| Cause of death | 1957 | 1963 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| *Urban* | | | | | | | | | | |
| Malignant tumours | 36.9 | 46.1 | 111.5 | 111.3 | 113.9 | 128.0 | 128.6 | 146.6 | 124.9 | 162.9 |
| Cerebrovascular diseases | 39.0 | 36.9 | 127.9 | 135.4 | 117.5 | 121.8 | 130.5 | 128.0 | 111.0 | 125.2 |
| Heart diseases | 47.2 | 36.1 | 115.3 | 132.5 | 131.0 | 92.5 | 90.1 | 106.7 | 98.2 | 129.2 |
| Respiratory diseases | 120.3 | 64.6 | 63.6 | 52.0 | 50.9 | 92.2 | 92.5 | 79.9 | 69.0 | 68.3 |
| Injury and poisoning | 19.0 | 16.2 | 23.1 | 29.2 | 32.5 | 40.4 | 40.6 | 35.6 | 45.3 | 38.1 |
| Digestive diseases | 52.1 | 31.4 | 28.8 | 22.7 | 23.3 | 23.5 | 19.5 | 18.4 | 18.1 | 17.0 |
| Pulmonary tuberculosis | 54.6 | 36.3 | 21.2 | 12.2 | 10.2 | 7.0 | 4.3 | 2.9 | 2.8 | 2.3 |
| Infectious diseases | 56.6 | 21.2 | 13.2 | 8.7 | 7.9 | 6.4 | 5.0 | 4.0 | 3.6 | 4.4 |
| *Rural* | | | | | | | | | | |
| Malignant tumours | | | 119.6 | 96.9 | 98.8 | 112.4 | 111.4 | 112.6 | 106.0 | 144.1 |
| Cerebrovascular diseases | | | 92.3 | 113.1 | 101.3 | 103.9 | 108.1 | 115.2 | 111.7 | 145.7 |
| Heart diseases | | | 123.2 | 170.6 | 165.8 | 69.6 | 62.0 | 73.4 | 62.1 | 111.3 |
| Respiratory diseases | | | 88.2 | 79.1 | 79.7 | 159.7 | 169.4 | 142.2 | 123.8 | 88.3 |
| Injury and poisoning | | | 24.3 | 27.7 | 46.8 | 68.5 | 72.7 | 64.9 | 44.7 | 52.9 |
| Digestive diseases | | | 46.3 | 34.8 | 35.5 | 32.2 | 30.2 | 23.9 | 17.1 | 14.8 |
| Pulmonary tuberculosis | | | 32.6 | 21.4 | 24.2 | 11.9 | 10.2 | 7.3 | 2.9 | 2.1 |
| Infectious diseases | | | 23.8 | 18.2 | 14.0 | 11.3 | 8.2 | 5.1 | 3.2 | 4.1 |

Sources: MOHa (various years, annual); MOHb (various years, annual)

provinces has been at an intermediate level. This pattern was very consistent in the 1990, 2000 and 2010 censuses, although life expectancies increased notably throughout China in 2010. According to the latest census, lower life expectancies were observed in Tibet, Yunnan, Guizhou, Qinghai, Xinjiang and Ningxia. All of them are in the western part of the country and tend to be areas with a high concentration of ethnic minority populations.

China also has marked rural-urban mortality differences. Figure 11.3 shows changes in life expectancies at birth in cities, towns, and rural areas based on the 1990, 2000 and 2010 censuses, and computed from government-released age-specific mortality data. While these directly calculated life expectancies are higher than those for the national population presented in the earlier sub-section, which were adjusted and released by the government, these results indicate that considerable mortality differences exist among populations living in the three types of areas,

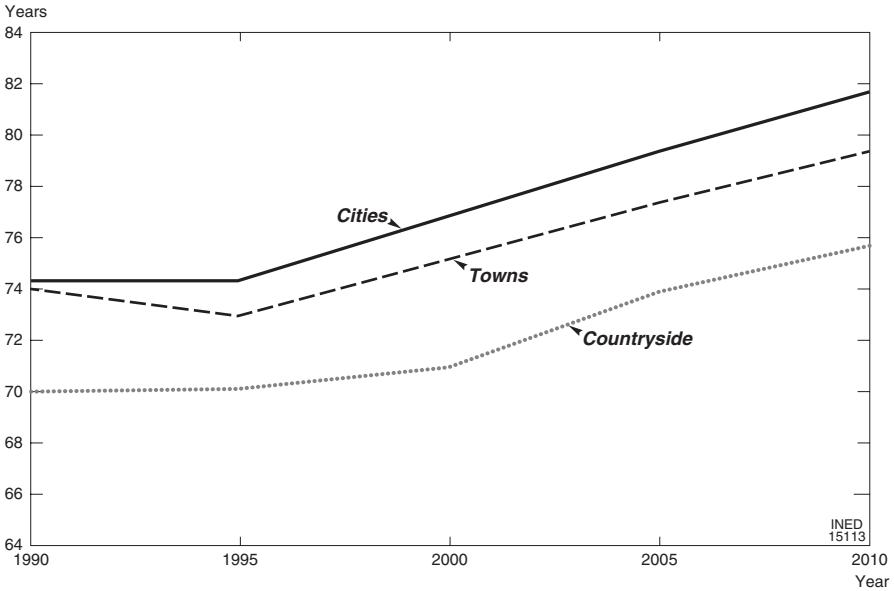



**Fig. 11.3** Changes in life expectancies in cities, towns, and rural areas 1990–2010 (Sources: PCO 1993, 2002, 2012)

especially between those in the cities and those in the countryside, with a slight increase in the rural-urban mortality gap in recent years. Statistics presented in the last sub-section also suggested that mortality rates for cerebrovascular diseases, respiratory diseases and injuries and poisoning were all markedly higher in rural than urban areas in 2010. They have played a major part in creating the rural-urban mortality difference.

The large variations in mortality observed between rural and urban areas, or between different geographic regions are often related to the levels of their economic development, health care and services, and many other factors. Variations of this kind were particularly pronounced during China's recent economic reform and transformation from a central planned economy to a market economy. In a paper published in 2006, one of the authors showed that considerable health and mortality differentials were observed in Chinese cities of different sizes and in rural areas with different levels of development in the late 1990s and early 2000s. This was closely related to the negative health consequences of the unprecedented social and economic transformation. As the proportion of people covered by health insurance schemes decreased and inequalities in income distribution grew wider, a large number of people with health problems could not get adequate care or treatments. For example, nearly half of rural patients who needed to have in-hospital treatment failed to do so or did not complete the recommended treatment because of financial difficulties. This clearly led to large inter-regional and intra-regional disparities in health and mortality (Zhao 2006). Related issues have also been examined by Banister (2007).

## Concluding Remarks

During the past six decades, mortality in China has declined considerably. The progress was particularly impressive in the first 30 years of Communist rule, with the exception of famine periods. While levels of economic development and standards of living were both low, rapid improvement in population health and mortality was widely observed in the country. This experience offers valuable lessons for other less developed countries. In the 1980s and 1990s, China's mortality decline began to slow down. There were two reasons for this. First, the country was entering a new stage of the epidemiologic transition and faced new and very different health challenges. Second, during this period, China's profound social and economic reform led to some negative impacts on population health and longevity, and China gradually lost the relative mortality advantage gained in previous decades. The Chinese government recognized these negative impacts and made substantial efforts to overcome them. Its achievements in maintaining rapid economic growth, raising people's standards of living, alleviating poverty, and re-establishing a nationwide medical care insurance system have been particularly notable. They have helped to speed up the improvement in mortality in recent years. China has made a major contribution to the world mortality decline by raising the life expectancy of nearly a quarter of the world's population and by offering useful experience of lowering mortality in a less developed country.

While China has been very successful in lowering mortality, there is little detailed knowledge of how this has been achieved, and its mortality transition is still poorly documented. In comparison with the investigation into fertility changes and family planning, studies of mortality decline have not received high priority. While hundreds of papers on China's fertility, migration, or population ageing have been published in the last decade, research on mortality changes in the country has been rather limited. This is partly because detailed mortality data are difficult to find or access. As documented in Section 11.2 of this chapter, compared with many other countries in the world, China has made considerable efforts to collect morbidity and mortality data. Some of these data are of good quality, and could become very important data sources for mortality research. A major challenge is to make these data available to researchers and to use them more efficiently. There is an urgent need to further improve mortality data collection, to extend their dissemination and use, and to enhance their quality.

China's long-term mortality decline started nearly a century later than that of many developed countries. But its mortality transition has been faster and is an illustration of the "accelerated model" of epidemiological transition (Omran 1971).

According to United Nations estimates, by 1990 China had already narrowed its life expectancy gap with respect to more developed countries from some 20 years in the early 1950s to about 5 years. This gap was further narrowed to about 2.5 years in 2010 (UN-WPP 2012). China has already entered the stage of delayed degenerative diseases or the fourth stage of the epidemiologic transition, as suggested by Olshansky and Ault (1986). The country is now facing many unprecedented health challenges. In the next 10–20 years, China's working-age population will decline, and

this will have major impacts on the sustainability of economic growth. The number and proportion of old people will increase rapidly. This may lead to an increase in the incidence of degenerative and other diseases and in demand for medical services and care. Even though China now has medical insurance programmes that cover almost its entire population, the quality of care and the level of insurance provided by these programmes vary significantly. On average they are notably lower than those in many developed countries. In addition, the health impacts of social and income inequalities will remain a major obstacle for raising the health status and longevity of poor and disadvantaged populations. Overcoming these difficulties is of great importance if China is to write another successful chapter in the history of improving mortality.

**Inset 11.1. Health System Reforms**

Since 1949, China has gone through two distinct phases: the hardline socialist era, marked by a quest for social equality (1950–1970s), and the liberal era, which saw a transition toward a socialist-style market economy (1980–1990s), and during which two crucial reforms were implemented: the decollectivization of agriculture and the restructuring of state-owned enterprises. Hitherto, collective institutions had taken charge of every Chinese person from cradle to grave. By disrupting overall social organization, the dismantling of those institutions had repercussions well beyond the economic sphere. Previously, each citizen, through his or her work unit, was strictly dependent on the state in all areas of everyday life: employment, housing, health, child education, retirement, social insurance, and so on. By taking apart its collective structures, the state has, in effect, partially or totally handed over to the private sector a set of functions that it could no longer perform.

Public service, as developed by Mao Zedong in the 1950s and 1960s, was informed by the principles of egalitarianism and massification. The focus was on public health, with three main goals: rapid improvement of access to healthcare; prevention and mass campaigns; and creation of a comprehensive insurance system. Priority was assigned to training medical workers in charge of dispensing primary care, and to pharmaceutical production. This strategy enabled China to achieve remarkable progress—notably in combating infant mortality and improving life expectancy at birth. In less than three decades, rural areas were provided with infrastructure offering access to primary healthcare for all local residents. By the eve of the reforms, mass vaccination campaigns, most notably against the most lethal childhood diseases, had eradicated large-scale epidemics and the worst health scourges. A number of community initiatives, such as sewer construction, were taken to improve sanitation standards. Drawing inspiration from the Soviet system, China established centres for disease and epidemic prevention supervised by the Health Ministry in various regions.

As with birth control, the health policies implemented from the 1950s onward owe their success largely to China's administrative organization. After the agrarian reform, collective property and central control by different echelons of government became the predominant mode of social and political organization, and the healthcare system was modelled on the administrative system. At that time, public hospitals charged for procedures and medicines, but the state-set prices were affordable for most people.

During the Cultural Revolution, which began in 1966, the role of Party leaders and the bureaucracy was reassessed. The widening disparities between urban and rural areas, between intellectuals and manual workers, and between Party leaders and the people were among the major dysfunctions denounced by Mao Zedong. In a directive of 1965, he reproached the Health Ministry for giving precedence to city-dwellers and neglecting the needs of the peasantry. In the years that followed, tens of thousands of urban healthcare workers were sent to the countryside on a permanent basis or as part of mobile medical teams. In 1975, rural areas numbered 1.6 million "barefoot doctors" who, despite their shoddy medical training, achieved a substantial improvement in health conditions and public hygiene.

A few years after Mao Zedong's death, the Chinese experienced a decisive turning-point in their lives: the advent of economic reforms. The outstanding productivity gains that they generated have led to sizable improvements in real income, nutrition, and housing, and hence a decline in overall poverty. But it is mainly the urban populations of the eastern coastal areas that have benefited from this progress. At the national level, inequality has widened, and economic growth has not favoured an acceleration of the health transition. Once under the responsibility of people's communes, the healthcare system is now decentralized, and has ceased to operate as a public service: patients are required to pay for treatment, while doctors and hospital managers must meet profitability criteria, making medical care unaffordable for the poorest citizens. Inequalities now exist not only in access to healthcare, but also in the quality of care.

In fact, the overall health status of the population has only improved marginally since the start of economic reform. A decline in the effectiveness of preventive and remedial care seems to have partially cancelled out the improvements brought by the general rise in living standards. Nearly everywhere, medical insurance, when it exists, covers only minor expenses, and families must pay for most of their medical costs.

Increasingly aware of the problems created by the transfer of welfare-state functions to the private sector, the government has recently conducted a major review of its health policies and introduced several embryonic reforms.

**I.A**.

## References


Banister, J. (1987). *China's changing population*. Stanford: Stanford University Press.

Banister J. (2007). Poverty, progress, and rising life expectancy. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 140–159). Oxford: Oxford University Press.

Banister J., & Hill, K. (2004) Mortality in China 1964–2000. *Population Studies, 58*(1), 55–75.

Banister, J., & Preston, S. H. (1981). Mortality in China. *Population and Development Review, 7*(1), 98–110.

Barclay, G. W., Coale, A. J., Stoto, M. A., & Trussell, T. J. (1976). A reassessment of the demography of traditional rural China. *Population Index, 42*(4), 606–635.

Caldwell, J. C. (1986). Routes to low mortality in poor countries. *Population and Development Review, 12*(2), 171–220.

Campbell, C. (1997). Public health efforts in China before 1949 and their effects on mortality: The case of Beijing. *Social Science History, 21*(2), 179–218.

Chen, Z. (2008). *Quanguo di san ci siyin huigu chouyang diaocha baogao (Report on the Third National Retrospective Survey on Causes of Death)*. Beijing: Zhongguo xiehe yike daxue chuban she (Beijing Union Medical College Press).

Huang, R., & Liu, Y. (1995). *Mortality data of China population (Zhongguo renkou siwang shuju ii)*. Beijing: China Population Publishing House (Zhongguo renkou chubanshe).

Li, M., & Qiu, W. (1987). Zh*ongguo renkou: Beijing juan (The population of China: Beijing volume)*. Beijing: Zhongguo caizheng jingji chuban she (China Finance and Economy Publishing House).

MOHa. (1991–2008). Ministry of Health. Department of Disease Control and CAPM (Chinese Academy of Preventive Medicine). *Quanguo jibing jiance xitong siyin jiance (Reports on Chinese Disease Surveillance System)*. Beijing: Beijing yike daxue chuban she (Beijing Medical University Press).

MOHb. (1990–2012). Ministry of Health. *Zhongguo weisheng tongji nianjian (China's Health Statistics Yearbook 2011)*. Beijing: Zhongguo xiehe yike daxue chuban she (Beijing Union Medical College Press).

NBSa. (1985–2012). National Bureau of Statistics. *Zhongguo renkou tongji nianjian (China Population Statistics Yearbook)*. Beijing: Zhongguo tongji chubanshe (China Statistical Press).

NBSb. (2007). National Bureau of Statistics of China. *2005 nian quanguo 1% renkou chouyang diaocha (Tabulation on the 2005 national 1% population samplesurvey)*. Beijing: Zhongguo tongji chubanshe.

Olshansky, S. J., & Ault, A. B. (1986). The fourth stage of the epidemiologic transition: The age of delayed degenerative diseases. *The Milbank Quarterly, 64*(3), 355–391.

Omran, A. R. (1971). The epidemiological transition: A theory of the epidemiology of population change. *Milbank Memorial Fund Quarterly, 49,* 509–538.

PCO. (1993). Population Census Office and National Bureau of Statistics of China. *Zhongguo 1990 nian renkou pucha ziliao (Tabulation on the 1990 population census of the People's Republic of China)*. Beijing: Zhongguo tongji chubanshe.

PCO. (2002). Population Census Office and National Bureau of Statistics of China. *Zhongguo 2000 nian renkou pucha ziliao (Tabulation on the 2000 population census of the People's Republic of China)*. Beijing: Zhongguo tongji chubanshe.

PCO. (2012) Population Census Office and National Bureau of Statistics of China. *Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 population census of the People's Republic of China)*. Beijing: Zhongguo tongji chubanshe.

Rao, C., Lopez, A. D., Yang, G., Begg, S., & Ma, J. (2005). Evaluating national cause-of-death statistics: Principles and application to the case of China. *Bulletin of the World Health Organization, 83*(8), 618–625.

Rao, C., Yang, G., Hu, J., Ma, J., Xia, W., & Lopez, A. D. (2007). Validation of cause-of-death statistics in urban China. *International Journal of Epidemiology, 36*(3), 642–651.

Rong, S. J., Li, R., Gao, X., Dai, D., Cao, G., Li, & Zhou, Y. (1981). Woguo 1973–1975 nian jumin pingjun qiwang shouming de tongji fenxi (*The Statistical Analysis of the Average Life Expectancy for the Chinese Population*:1973–1975). Renkou yu jingji (*Population and Economics*), *1*, 24–31.

UN-WPP. (2012). United Nations. World population prospects: The 2012 revision. http://esa.un.org/wpp/unpp/panel_population.htm. Accessed 23 Dec 2013.

Yang, G., Hu, J., Rao, K., Ma, J., Rao, C., & Lopez, A. D. (2005). Mortality registration and surveillance in China: History, current situation and challenges. *Population Health Metrics, 3*(1), 3.

Yang, G., Rao, C., Ma, J., Wang, L., Wan, X., Dubrovsky, G., & Lopez, A. D. (2006). Validation of verbal autopsy procedures for adult deaths in China. *International Journal of Epidemiology, 35*(3), 741–748.

Yang, G., Kong, L., Zhao, W., Wan, X., Zhai, Y., Chen, L., & Koplan, J. P. (2008). Emergence of chronic non-communicable diseases in China. *The Lancet, 372*(9650), 1697–1705.

Zhao, Z. (1997). Demographic systems in historic China: Some new findings from recent research. *Journal of the Australian Population Association, 14*(2), 201–232.

Zhao, Z. (2006). Income inequality, unequal health care access, and mortality in China. *Population and Development Review, 32*(3), 461–483.

Zhao, Z. (2007). Changing mortality patterns and causes of death. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 160–176), Oxford: Oxford University Press.

Zhao, J. (2013). *Changing cardiovascular disease mortality and advancing longevity: Hong Kong, Shanghai and Taipei*. PhD dissertation, The Australian and Demographic and Social Research Institute, The Australian National University.

Zhao, J., Tu, E., McMurray, C., & Sleigh, A. (2012). Rising injury mortality in urban China: Demographic burden, underlying causes and policy implications. *Bulletin of the World Health Organization, 90*(6), 461–467.

# Chapter 12
# Dwindling Labour Supply in China: Scenarios for 2010–2060

**Michele Bruni**

## 12.1 Introduction

The social and economic implications of the demographic future of China are starting to attract increasing attention. The decline in fertility that has affected China in the last half century will necessarily provoke a structural shortage of labour supply too significant to be counteracted by demographic and economic policies alone (Bruni 2009, 2011, 2013b). To continue its march towards world economic and political primacy, China may therefore be confronted by an unprecedented inflow of international migrants (Skelton 2011).

In the early 2000s, shortages of migrant workers started to occur in the Pearl River Delta. The phenomenon then spread to the Yangtze River Delta, and even to provinces in central China, which normally played the role of emigration areas (Cai 2006). While these phenomena were reported with astonishment by the press, Chinese scholars provided a very simple explanation: the Lewis turning point was already in sight and China's oversupply of labour was on its way to becoming a thing of the past (Huang and Jiang 2010; Das and N'Diaye 2013). It was also clearly indicated that labour shortage was a long-term phenomenon affecting both rural and urban areas, that it would bring an increase in wage levels and would require a change in China's economic growth model.[1]

We know that China's labour supply will shrink in the next 20 years (as the young people who will enter the labour force during this period are already born) and it will probably continue to contract even more dramatically in the following 30 years. Given China's population size and its significant role in the international economic arena, the central question is whether it can deal with this unprecedented

[1] Members of the Institute of Population and Labour Economics of the Chinese Academy of Social Sciences, and especially its director, Cai Fang, have played a central role in signalling that China has reached the Lewis turning point and in showing some of the main consequences (Cai 2008a, b; Cai and Wang 2006).

M. Bruni (✉)
Centre for the Analysis of Public Policies – Public Policy Research Department,
University of Modena, Modena, Italy
e-mail: mbbruni.44@gmail.com

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_12, © Springer Science+Business Media Dordrecht 2014

phenomenon simply by increasing productivity and delocalizing production, possibly with the support of other measures such as the abolition of the *hukou* system and the one-child policy, and changes in the legal retirement age, as recently suggested by the World Bank (World Bank 2012). Our assumption is that no matter what measures are taken, they will be insufficient to alleviate the labour shortage, and China may have no choice but to resort to mass immigration.

The interest of this question goes beyond the specific case of China, since a similar demographic trend is already affecting, or will shortly affect, at least 50 other countries that taken together have a demographic weight similar to that of China (Bruni 2009). Moreover, this century is expected to witness other unprecedented demographic phenomena that must be taken into consideration when drawing labour market and demographic scenarios. Most probably, the world working-age population (hereafter WAP) will start to decline in around the middle of the century (Lutz et al. 2001; UN-WPP 2012). Moreover, according to existing projections and the assumptions that underline them, the distribution of world population will become more and more polarized (an increasing number of countries will have negative natural balances, while the poorest countries may be affected by an unprecedented population explosion), and this situation will not find any relief through international migration flows that are projected by the United Nations to progressively decline to zero.

Are these scenarios realistic? In the last 40 years the forecasting performance of both demographers and economists has been, to say the least, quite modest. In the 1970s nobody foresaw that the countries of the northern shore of the Mediterranean would register a sudden change in the sign of their migration balance and would rapidly become major destination countries (Venturini 2001). Later, the majority of demographers[2] continued to assert that the fall in the total fertility rate (TFR) would stop at replacement level.[3] At the same time, both demographers and economists generally dismissed the view that countries with below-replacement fertility would need an unprecedented number of migrants. They argued, against empirical evidence, that the shortage of labour supply could be addressed by other measures, mainly increases in productivity and higher labour market participation rates among specific groups. Finally, demographers continue to propose scenarios in which the fertility decline will produce a decline in total population, an even more pronounced decline in working-age population, and unprecedented ageing (Bruni 2009).

In reality (i) changes in the sign of the migration balance have continued to occur without being forecasted;[4] (ii) the TFR in some countries has declined to below

[2] Obviously there have been notable exceptions. See, for instance, Caldwell (1982), and Jones and Douglas (1997).

[3] The United Nations projections continue to assume long-term convergence of fertility to replacement level (UN-WPP 2012).

[4] After the Mediterranean countries, the reversal of the sign of the migration balance has affected many other countries, such as the Russian Federation, the Czech Republic, Hungary, Ireland, Malta, Slovenia, and Cyprus (Bruni 2013b).

one child per woman; (iii) countries and areas with below-replacement fertility have attracted sufficient migrants to generate population growth.[5]

The reliability of demographic scenarios and their capacity to capture the future depends both on the accuracy of the initial demographic data and on the model adopted. The objective of this chapter is twofold: first, to show the implications for the demographic future of China based on the 2010 census data; second, to provide labour market and demographic scenarios based on an alternative approach.

The first section of this chapter presents the United Nations Population Division medium-term projections for China's working-age population and compares them with a projection that adopts the same methodology, but which is based on the 2010 census data. The following section then provides a critical assessment of the assumptions underlying the United Nations' projections (hereafter UN-WPP) and discusses them with reference to the medium- and long-term scenarios, both at the global level and for China. Then, factors underlying economic migration are presented, and followed by the use of an alternative methodology to jointly build labour market and demographic scenarios, based on a demand-driven migration model. The next section presents alternative scenarios for the 2010–2030 period and some considerations for the following 30 years, special attention being given to the impact of migration on the working-age population, fertility and ageing, and therefore on total population. The last section of the chapter discusses the various options open to China for addressing the decline in its working-age population, and therefore the shortage of labour supply.

## 12.2 China's Census Data and the United Nations Scenarios

### *12.2.1 United Nations Population Scenarios*

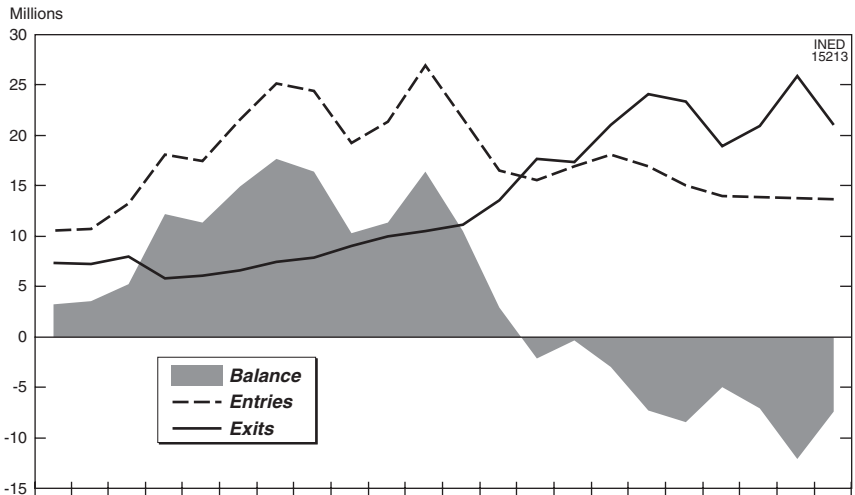
The Population Division of the United Nations publishes demographic scenarios that are used by scholars and politicians to design demographic and economic policies. Among other results, they allow describing the past and future trends of China's working-age population (here defined, according to the international standard, as the population aged 15–64) from 1950 to 2060 (Fig. 12.1).[6]

The following points can be retained:

- Generational entries into WAP — that reflect the births that took place 15 years before — present two peaks in the periods 1980–1985 and 2000–2005, with yearly average values of respectively 25.2 and 26.9 million. After 2005 entries began to decline and are expected to continue to do so at least until 2060.

[5] Italy, Spain, and Germany represent some of the most relevant cases.

[6] The projections cover the period up to 2100, but WAP data after 2060 reflect a very questionable assumption of increasing TFR.




| | 1950 1955 | 1955 1960 | 1960 1965 | 1965 1970 | 1970 1975 | 1975 1980 | 1980 1985 | 1985 1990 | 1990 1995 | 1995 2000 | 2000 2005 | 2005 2010 | 2010 2015 | 2015 2020 | 2020 2025 | 2025 2030 | 2030 2035 | 2035 2040 | 2040 2045 | 2045 2050 | 2050 2055 | 2055 2060 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Balance | 3.2 | 3.5 | 5.3 | 12.2 | 11.4 | 14.9 | 17.7 | 16.5 | 10.3 | 11.3 | 16.4 | 10.6 | 3.0 | -2.1 | -0.4 | -2.9 | -7.2 | -8.4 | -4.9 | -7.1 | -12.1 | -7.4 |
| Entries | 10.6 | 10.8 | 13.3 | 18.1 | 17.4 | 21.6 | 25.2 | 24.4 | 19.3 | 21.4 | 26.9 | 21.7 | 16.5 | 15.6 | 17.0 | 18.1 | 16.9 | 15.0 | 14.0 | 13.8 | 13.8 | 13.6 |
| Exits | 7.4 | 7.3 | 8.0 | 5.8 | 6.1 | 6.6 | 7.5 | 7.9 | 9.0 | 10.0 | 10.6 | 11.1 | 13.5 | 17.7 | 17.3 | 21.0 | 24.1 | 23.4 | 18.9 | 20.9 | 25.9 | 21.0 |

**Fig. 12.1** Entries, exits and total balance in China's working-age population between 1950–1955 and 2055–2060 according to the medium variant of the UN-WPP (annual average, millions) (Source: UN-WPP 2012)

- Generational exits are equal to the sum of people that in any given period (i) have reached the age of 65, (ii) have died at working age, and (iii) have migrated. After falling to a minimum of 6 million between 1965 and 1970, generational exits have been progressively increasing and are expected to follow the same trend until 2030–2035 when they will peak at an average yearly value of around 24 million. In the following years generational exits do not present a well-defined trend, with values included between 18.9 and 25.9 million.
- The trend in WAP balance is the result of changes in generational entries and exits. It reached a maximum between 1980 and 1985, when WAP grew at a yearly average of almost 18 million; it presents a second peak at 16 million between 2000 and 2005, then enters a phase of progressive decline. The WAP balance is expected to become negative starting from 2015–2020.

The data above have been computed on the basis of the medium variant projection, the most probable according to the United Nations. Under this scenario, the working-age population is expected to decrease by around 27 million between 2015 and 2030 and by 235 million in the following 30 years. As a consequence, the WAP should drop from a maximum of 1,015 million, reached in 2015, to 752 million in 2060 (−25.9%). Table 12.1 recalls the main results of UN-WPP medium and low variants.

**Table 12.1** Population by main age group, according to the UN-WPP medium and low variants—Absolute values (2010, 2060, and 2100) and absolute changes (2010–2060, 2060–2100 and 2010–2100) (millions)

| | 0–14 | 15–64 | 65+ | Total |
|---|---|---|---|---|
| Population in 2010 (millions) | 247 | 1,000 | 114 | 1,360 |
| | *Medium variant* | | | |
| *Absolute values (millions)* | | | | |
| 2060 | 192 | 752 | 369 | 1,313 |
| 2100 | 165 | 615 | 306 | 1,086 |
| *Absolute change (millions)* | | | | |
| 2010–2060 | −54 | −247 | 255 | −47 |
| 2060–2100 | −27 | −138 | −63 | −228 |
| 2010–2100 | −82 | −385 | 193 | −274 |
| | *Low variant* | | | |
| *Absolute values (millions)* | | | | |
| 2060 | 104 | 605 | 369 | 1,078 |
| 2100 | 61 | 317 | 230 | 608 |
| *Absolute change (millions)* | | | | |
| 2010–2060 | −142 | −395 | 255 | −282 |
| 2060–2100 | −44 | −288 | −138 | −471 |
| 2010–2100 | −186 | −683 | 117 | −752 |

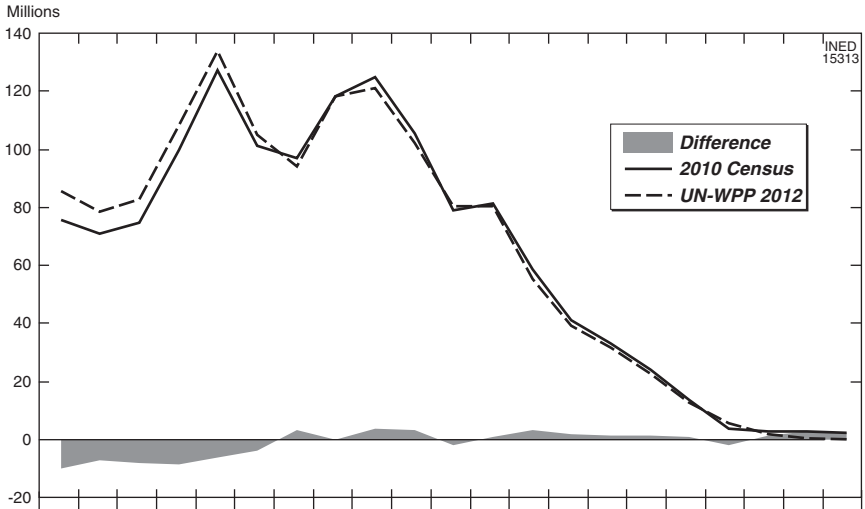
Source: Author's calculations based on UN-WPP (2012)

Figure 12.1 also captures the standard phases that affect WAP as well as total population when a country is affected by the so-called "demographic transition":[7] a first phase during which the total balance is positive and increasing; a second phase in which the population is still increasing but at a declining rate; a third phase during which population is declining. Moreover, after an initial phase in which average age will decline, a process of ageing will set in.

Figure 12.1 shows that in the case of China's WAP, the first phase lasted until 1985, and the second covers a time interval of around 30 years, between 1985 and 2015. Finally, WAP is expected to continue declining at least until the end of the century.

These data raise at least two very important questions. The first is to what extent the 2010 census data support projections consistent with those of UN-WPP. The second is related to their realism and reliability. Would the socioeconomic fabric of China withstand the decline in WAP suggested by the United Nations? Is it plausible to imagine that the shortage of labour supply generated by the decline in WAP will not attract a share of the workforce present in other countries, just as the structural

[7] The demographic transition is defined as the passage from a traditional demographic regime, characterized by high birth and mortality rates, to a modern demographic regime characterized by low birth and mortality rates. Both regimes are described as equilibrium regimes. Therefore, the demographic transition theory has always maintained that the fertility decline would stop at 2.1 children per woman. This prediction has already been largely invalidated by empirical evidence, but continues to represent a reference point for theoretical and empirical analysis.




| | 0 4 | 5 9 | 10 14 | 15 19 | 20 24 | 25 29 | 30 34 | 35 39 | 40 44 | 45 49 | 50 54 | 55 59 | 60 64 | 65 69 | 70 74 | 75 79 | 80 84 | 85 89 | 90 94 | 95 99 | 100 + |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Difference | -10.0 | -7.4 | -8.0 | -8.5 | -6.5 | -4.1 | 3.0 | -0.3 | 3.7 | 3.4 | -1.8 | 0.8 | 3.3 | 1.8 | 1.4 | 1.1 | 0.8 | -1.8 | 1.2 | 2.6 | 2.2 |
| 2010 Census | 75.5 | 70.9 | 74.9 | 99.9 | 127.4 | 101.0 | 97.1 | 118.0 | 124.8 | 105.6 | 78.8 | 81.3 | 58.7 | 41.1 | 33.0 | 23.9 | 13.4 | 3.7 | 2.8 | 2.8 | 2.2 |
| UN-WPP 2012 | 85.6 | 78.2 | 82.9 | 108.4 | 133.9 | 105.2 | 94.1 | 118.3 | 121.0 | 102.2 | 80.6 | 80.5 | 55.4 | 39.3 | 31.5 | 22.8 | 12.6 | 5.6 | 1.6 | 0.2 | 0.0 |

**Fig. 12.2** Population by 5-year age-groups according to the 2010 census and UN-WPP (millions) in 2010 (Source: Author's calculations based on PCO 2012 and UN-WPP 2012)

shortage of labour affecting urban areas and coastal provinces in the past 25 years has attracted a significant share of the workforce present in China's countryside and central and western provinces?

### *12.2.2 An alternative Scenario Based on the 2010 Census Data*

Figure 12.2 presents the structure of China's population in 2010, according to the UN-WPP and the 2010 census. The total population is slightly higher for the UN-WPP than at the census: 1,360 and 1,337 million respectively, but some differences emerge when we consider the distribution by 5-year age groups. As shown by the figure, the census values are lower in the first six age groups, and slightly higher, with some minor exceptions, in the following ones.

To capture the implications of these differences, we have computed a WAP projection using the 2010 census data and adopting the assumptions used in the UN-WPP in their medium variant. The results and a comparison with UN-WPP are reported in tables 12.2 and 12.3.

Table 12.2 shows clearly that the smaller size of the youngest generations as recorded at the 2010 census translates into lower numbers of entries into WAP in the following decades. As a consequence, *ceteris paribus*, China's census data sug-

**Table 12.2** Generational entries, exits and natural balance by sex in the working-age population between 2010–2015 and 2025–2030 (millions)

| | Census | | | UN-WPP | | |
|---|---|---|---|---|---|---|
| | Entries | Exits | Balance | Entries | Exits | Balance |
| *Men* | | | | | | |
| 2010–2015 | 40.1 | 36.9 | 3.2 | 44.2 | 35.4 | 8.8 |
| 2015–2020 | 38.3 | 45.6 | −7.3 | 41.9 | 46.3 | −4.4 |
| 2020–2025 | 40.7 | 43.9 | −3.2 | 45.9 | 45.3 | 0.5 |
| 2025–2030 | 40.8 | 55.2 | −14.4 | 48.7 | 54.1 | −5.5 |
| *Women* | | | | | | |
| 2010–2015 | 34.5 | 34.0 | 0.5 | 38.4 | 32.3 | 6.2 |
| 2015–2020 | 32.2 | 43.6 | −11.3 | 35.9 | 42.1 | −6.2 |
| 2020–2025 | 34.2 | 41.1 | −6.9 | 39.0 | 41.3 | −2.3 |
| 2025–2030 | 34.2 | 53.0 | −18.8 | 41.9 | 51.0 | −9.1 |
| Total | | | | | | |
| 2010–2015 | 74.6 | 70.9 | 3.7 | 82.6 | 67.7 | 14.9 |
| 2015–2020 | 70.5 | 89.1 | −18.6 | 77.8 | 88.4 | −10.6 |
| 2020–2025 | 74.9 | 85.1 | −10.1 | 84.9 | 86.7 | −1.8 |
| 2025–2030 | 75.0 | 108.2 | −33.2 | 90.6 | 105.2 | −14.6 |
| 2015–2030 | 220.4 | 282.4 | −62.0 | 253.3 | 280.2 | −26.9 |

Source: Author's calculations based on PCO (2012) and UN-WPP (2012)

**Table 12.3** Estimates of WAP based on the 2010 census data and UN-WPP estimates between 2010 and 2030 (millions)

| | Estimates based on census data | | | UN-WPP estimates | | |
|---|---|---|---|---|---|---|
| | Men | Women | Total | Men | Women | Total |
| 2010 | 505 | 487 | 993 | 517 | 483 | 1,000 |
| 2015 | 509 | 488 | 996 | 526 | 489 | 1,015 |
| 2020 | 501 | 476 | 978 | 521 | 483 | 1,004 |
| 2025 | 498 | 469 | 968 | 522 | 480 | 1,002 |
| 2030 | 484 | 451 | 934 | 516 | 471 | 988 |

Source: Author's calculations based on PCO (2012) and UN-WPP (2012)

gest that, between 2015 and 2030, WAP will decline by 62 million (−6.2%) and not by 26.9 million (−2.7%) as suggested by the UN-WPP. More specifically, WAP is expected first to increase slightly before declining to 934 million by 2030, a value much lower than the UN-WPP estimate of 988 million (Table 12.3).

The demographic and economic spheres are clearly interlinked. This is made evident by the labour force shrinkage that would be provoked by the WAP projection based on the 2010 census data under the rather optimistic assumptions that sex- and age-specific participation rates remain constant at 2010 levels. As shown in Table 12.4, between 2015 and 2030, the labour force would decline by around 74 million.[8] Moreover the average yearly decline would progressively increase from 3.4 million between 2010 and 2015 to 6.7 million between 2025 and 2030.

[8] This result is the consequence of changes in the age structure brought about by entries into WAP of new generations that are smaller than the previous ones, and by the movement of the generations present in 2030 along the ages of working life or out of it.

**Table 12.4** Labour force by sex based on specific participation rates constant at the 2010 level, absolute values for 2010–2030 and absolute changes in each 5-year interval

| | Men | Women | Total |
|---|---|---|---|
| | *Absolute values (millions)* | | |
| 2010 | 421 | 339 | 761 |
| 2015 | 428 | 342 | 770 |
| 2020 | 422 | 331 | 753 |
| 2025 | 412 | 318 | 730 |
| 2030 | 395 | 302 | 697 |
| | *Absolute change (millions)* | | |
| 2010–2015 | 7.0 | 2.5 | 9.5 |
| 2015–2020 | −6.2 | −10.8 | −17.0 |
| 2020–2025 | −10.2 | −12.8 | −23.0 |
| 2025–2030 | −16.9 | −16.5 | −33.4 |
| 2015–2030 | −33.3 | −40.2 | −73.5 |

Source: Author's calculations based on PCO (2012)

**Inset 12.1 United Nations Projections and Assumptions**

For a population distributed by sex and single year of age in a given year, the population in the following year is obtained (i) by adding the number of newborns in the age groups 0–1, (ii) by subtracting from all the single-year cohorts the estimated number of deaths, and (iii) by adding to each cohort the expected migration balance. This operation is then repeated for all the years of the chosen interval. This approach therefore requires three sets of explicit assumptions on fertility, mortality and migration.

The World Population Prospects proposed by the United Nations are built upon two meta-assumptions: (i) the demographic sphere and the economic sphere are totally independent from each other; (ii) the demographic transition—now affecting almost all countries in the world—will lead to uniformity of the main demographic indicators of mortality and fertility across continents and across countries at different levels of development. In order to obtain this result the UN-WPP (under its medium variant) assumes that:

1. The total fertility rates (TFR) will converge to the replacement level of around 2.1 children per woman, both in countries that are still in the transition phase and in those that are already characterized by below-replacement fertility;
2. Life expectancy will increase in every country to levels inversely related to the initial level in such a way that the world average life expectancy at birth will tend towards an asymptotic value of almost 82 years;

3. After 2050, international migration flows will progressively decline to zero by 2100.[1]

The picture that emerges is that of a planet still divided into more than 200 countries, all of them ultimately characterized by very similar reproductive behaviour and length of life, and by decreasing migration flows to reach zero migration by 2100. At the same time, there would be increasing polarization between, on one hand, a growing number of countries with a declining WAP and, on the other, a decreasing number of countries with an exploding WAP. Therefore, in the absence of migration, the first group of countries would have to destroy an increasing number of jobs every year, while the second group of countries would have to create a number of jobs demanding an unattainable rate of economic growth. This should be sufficient to demonstrate that the assumptions on migration adopted by the UN-WPP are not very realistic (Bruni 2009, 2012).

**M.B.**

[1] Historical data do not provide any support to this assumption (Bruni 2013b) and the great majority of demographers criticized this approach when long-term projections were published in 2004 (UN-PD 2004).

Under the medium variant scenario, as we have already seen (Table 12.1), China's WAP is expected to decline by 247 million between 2010 and 2060 and by another 138 million in the following 40 years, for a grand total of 385 million between 2010 and 2100. WAP would therefore decline from 1,000 to 752 million in 2060 and then to 615 million in 2100. The low variant projection is even more alarming, with WAP expected to decline by 395 million between 2010 and 2060 and by a further 288 million in the following 40 years so that by 2100 WAP would be down to 317 million, around 32% of the initial level (Table 12.1). At the same time, the migration balance is expected to remain negative, amounting to −14.5 million between 2010 and 2060 and −4.2 million in the following 40 years.

By now it seems that the forecasting method adopted by UN-WPP allowing no positive net migration to China — as well as to other countries with declining WAP — by 2100 is not realistic. Therefore, to project population with an acceptable level of plausibility regarding future migration trends, we propose an alternative model positing that the demographic and economic spheres interact in the labour market. Here demographic trends and economic growth can generate positive or negative structural imbalances between labour demand and labour supply that, in their turn, will end up provoking migration flows.

## 12.3 Factors Underlying Economic Migration

The model we propose stands on the assumption that economic migration flows, both at the international and national levels, are largely explained by the co-existence of countries or areas characterized by a structural shortage of labour supply, and of countries or areas characterized by a structural surplus,[9] the thesis being that migration is demand-driven, but takes place only when surplus supply of labour exists in other countries or areas.[10]

The total labour needs (TLN) are defined as the difference between labour supply and labour demand over a given time interval. Taking an operational perspective, the change in labour supply can be identified with the change in the level of the labour force (ΔLF) registered or forecasted over a given interval $(t, t+1)$. From a computational perspective, the absolute change in the labour force is the result of two components, one of demographic origin, the other connected to the propensity of working-age people to be present in the labour market. The former is identified by the change in the size of the labour force due to the change in the size of working-age population, keeping the participation rate constant. It is thus equal to the product of the change in WAP (ΔWAP) and the participation rate at the beginning of the period ($\text{rop}_t$). The latter is the result of the change in participation rate that occurs during the interval considered and is equal to the product of the change in the participation rate ($_t\Delta\text{rop}_{t+1}$),[11] and the size of the labour force at the end of the period ($\text{LF}_{(t+1)}$). The increase in labour demand is identified by the change in the level of employment (ΔE) registered or forecasted over a given time interval $(t, t+1)$ determined by the production growth rate and the typology of development chosen by the country.

Therefore:

$$\begin{aligned} {}_t\text{TLN}_{(t+1)} &= {}_t\Delta\text{LF}_{(t+1)} - {}_t\Delta\text{E}_{(t+1)} \\ &= \left[\left(\text{rop}_t \times {}_t\Delta\text{WAP}_{(t+1)}\right) + \left({}_t\Delta\text{rop}_{t+1} \times \text{LF}_{(t+1)}\right)\right] - {}_t\Delta\text{E}_{(t+1)} \end{aligned} \tag{12.1}$$

The three components of [12.1] can be positive or negative, depending on trends in labour force, employment, and participation rates. Therefore, TLN can also be positive or negative.

[9] For a detailed presentation of the model (derived from a stock-flow model of the labour market developed in the 1980s), see Bruni (1988). For an application to a series of countries and areas with below-replacement fertility, see Bruni (2009). For an application to China, see Bruni (2013b), (2011), and Bruni and Tabacchi (2011).

[10] According to this perspective, the migration balance of arrival countries is determined by their total manpower needs. As a consequence, the world total migration flows are largely determined by labour demand in arrival countries.

[11] In this simplified approach we take this propensity as exogenous. However a more correct assumption would be to link the trend in the propensity to participate with the trend in employment rate.

A negative value of the TLN, if it is a significant and long-lasting phenomenon, identifies the presence of a structural shortage of labour supply. In a first phase, it can be satisfied by the unemployed, by an increase in labour force participation, by internal migration from less developed areas within the country. Sooner or later, these additional sources of labour supply will necessarily be exhausted, making immigration the solution to alleviate the shortage.

Conversely, a positive value of TLN identifies a structural surplus of labour supply if it is a significant, and long-lasting phenomenon. In this case, the situation can be initially dealt with by an expansion of the informal economy, an increase in average family size and by a reduction in participation rates, but in the long run only emigration can provide a solution to the problem.

We therefore posit that a country or area characterized by a structural shortage of labour supply will (i) end up having a positive net migration (PM) and that (ii) net migration will be directly related to the TLN:

$$PM = B \times TLN \tag{12.2}$$

At the beginning of any economic emigration process, only workers move to the destination country. With time, they will be joined by some family members. Therefore, at the initial stage, B is equal to 1 and will then progressively increase. Previous analyses have shown that in the long run, countries where migration has already become a structural phenomenon are characterized by a value of B approximately equal to 1.5 (Bruni 2009).

In conclusion, the model posits that the level and direction of migration flows depend on the interaction between the demographic and the economic spheres that, under certain circumstances, determines the co-existence of countries or areas with a structural shortage of labour supply and countries or areas with a structural surplus.

The presence of structural shortage or surplus of labour supply allows classifying countries as potential arrival or departure countries. In general, demographic trends play a major role in determining both situations, but economic growth is also a relevant factor.

China provides strong evidence of this mechanism. In the last 25 years, more than 250 million Chinese have taken part in the biggest migration in human history, moving from rural areas and provinces characterized by a structural surplus of labour supply to urban areas and provinces where the local labour supply was structurally insufficient to respond to market needs.

## 12.4 A Model to Jointly Build Labour Market and Demographic Scenarios

We can now insert the migration model into the procedure for producing demographic projections. Since our migration model is demand-driven, we will take the perspective of a potential arrival country.

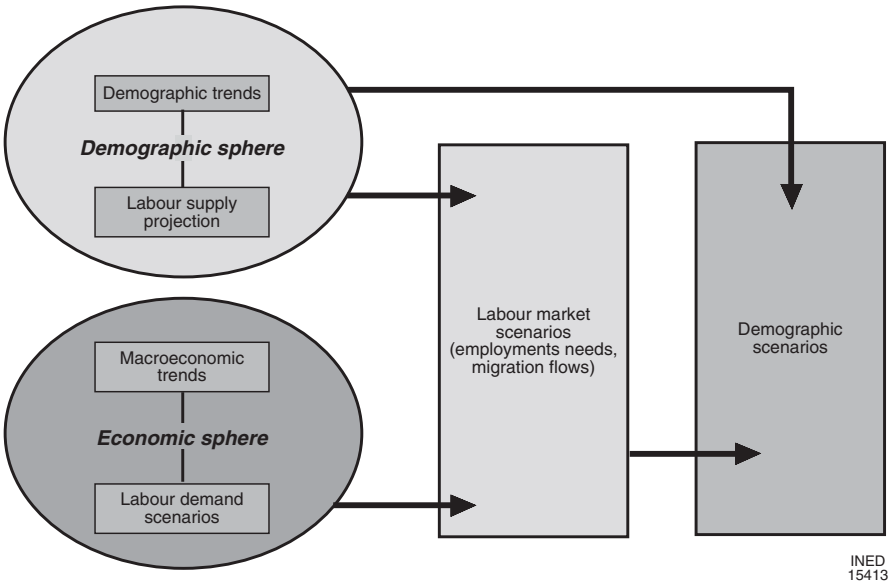



**Fig. 12.3** Methodology to build labour market and demographic scenarios: an overview

The interaction between the demographic sphere (that provides the projection of the closed population of working age) and the economic sphere (from which we can deduce alternative scenarios of employment growth) allows us to verify whether a country presents a structural labour supply shortage (Fig. 12.3). We can then compute employment needs (the difference between the growth in labour supply and demand) and then the number of migrants. Once the number of migrants is known, we can go back to the standard demographic procedure and build demographic scenarios based on the projection of the closed population and alternative scenarios of migration flows.

Figure 12.4 is a more detailed representation of the procedure, articulated into two parallel paths. The first provides a projection of the WAP in absence of migration, and then estimates the labour force on the basis of alternative assumptions on the rate of participation. The second defines alternative values of labour demand on the basis of alternative assumptions on economic growth, employment-income elasticity and the reactivity of foreign migrants to employment opportunities. The two paths interact, allowing estimation of labour needs and net migration in alternative scenarios. The final part of the exercise provides estimates of the number of births, of the number of deaths and then of total population as a function of employment growth and other scenario variables.

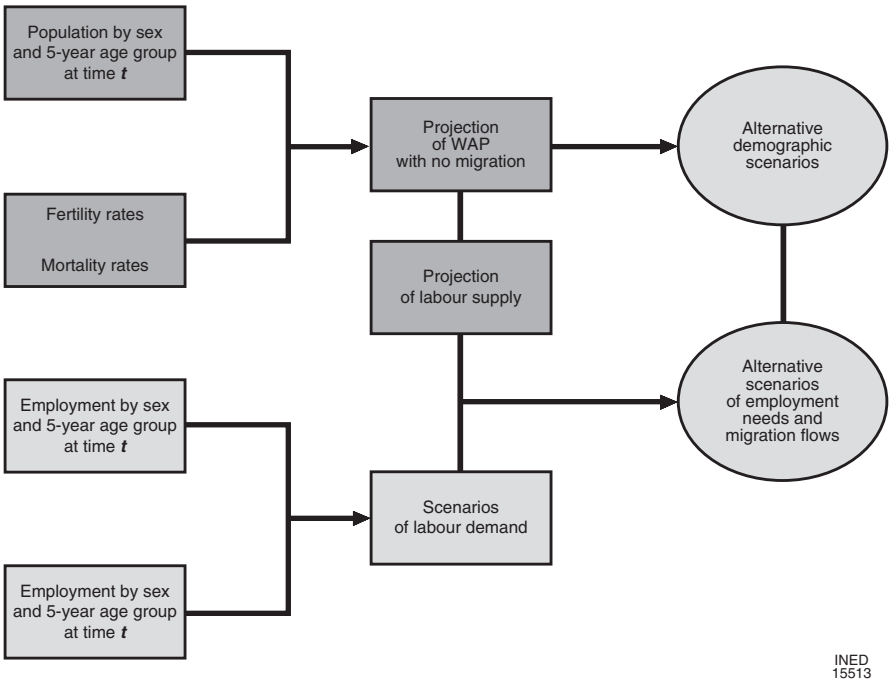



**Fig. 12.4** Methodology for building labour market and demographic scenarios: the computational procedure

## 12.5 Scenarios for 2010–2030

We will propose fully-fledged scenarios for the 2010–2030 period, while for the following 30 years we will limit ourselves to some general considerations. The first reason for the choice of the 2010–2030 interval is that the young people reaching working age during this period are already born or will be born in this 5-year interval. The second is that the World Bank has taken 2030 as the time horizon of its recent report (World Bank 2012).

### *12.5.1 Data and Assumptions*

The scenarios will be based on the following set of data and assumptions:

1. Population, labour force and employment data by sex and 5-year age group taken from the 2010 census;
2. Participation rates: two assumptions are considered:
   − The participation rate remains constant at the 2010 level (LFA);

**Table 12.5** Working-age population, labour force and employment in alternative scenarios between 2010 and 2030 (millions)

| | Working-age population | Labour force at constant participation rates (LFA) | Labour force at declining participation rates (LFB) | Employment declining in line with World Bank scenario (E1) | Employment constant at 2010 level (E2) | Employment increasing in line with past trend (E3) |
|---|---|---|---|---|---|---|
| 2010 | 993 | 761 | 761 | 715 | 715 | 715 |
| 2015 | 992 | 770 | 755 | 736 | 715 | 735 |
| 2020 | 970 | 753 | 729 | 722 | 715 | 750 |
| 2025 | 958 | 730 | 705 | 707 | 715 | 760 |
| 2030 | 923 | 697 | 661 | 686 | 715 | 765 |
| 2010–2030 | −70 | −64 | −100 | −29 | 0 | 50 |
| 2015–2030 | −70 | −73 | −94 | −50 | 0 | 30 |

Source: Author's calculations based on PCO (2012)

- The participation rate declines at an increasing rate[12] due to rising participation in higher education, urbanization and contraction of the agricultural sector (LFB);

3. Employment level: the following three alternatives are considered:
   - The World Bank scenario in which employment declines by around 30 million between 2010 and 2030[13] (E1);
   - A constant level of employment (E2);
   - Positive but declining absolute changes in the level of employment in line with recent trends[14] (E3).
4. Reactivity of immigration to employment needs: given that immigration is a new phenomenon in China, we assume that its value will progressively increase from 1 in the first interval characterized by a positive migration balance to 1.15.

Table 12.5 reports WAP, labour force and employment for the period 2010–2030 computed on the basis of the first three assumptions.

### *12.5.2 Employment Needs, Migration and Working-Age Population*

Table 12.6 reports the employment needs [i.e. the difference between the change in the size of labour force (labour supply) and the change in the level of employment (labour demand)] under six scenarios obtained by combining the two assumptions

[12] The participation rate is assumed to decline by 0.5% points between 2010 and 2015, by 1 point between 2015 and 2020, and then by 1.5 and 2 points in the two following 5-year periods.

[13] In line with the World Bank report, we assume that employment will grow by 3% between 2010 and 2015, then decline by 2% in the following two 5-year periods and by 3% between 2025 and 2030.

[14] We assume that employment will grow by 20, 15, 10 and 5 million, respectively, in the four 5-year periods considered.

**Table 12.6** Total labour needs in six alternative scenarios of labour supply and labour demand between 2010 and 2030 (millions)

| | Scenario A1 | Scenario A2 | Scenario A3 | Scenario B1 | Scenario B2 | Scenario B3 |
|---|---|---|---|---|---|---|
| | Labour force at constant participation rates and declining employment | Labour force at constant participation rates and constant employment | Labour force at constant participation rates and increasing employment | Labour force at declining participation rates and declining employment | Labour force at declining participation rates and constant employment | Labour force at declining participation rates and increasing employment |
| 2010–2015 | −12 | 9 | −11 | −27 | −5 | −25 |
| 2015–2020 | −2 | −17 | −32 | −12 | −26 | −41 |
| 2020–2025 | −9 | −23 | −33 | −9 | −24 | −34 |
| 2025–2030 | −12 | −33 | −38 | −23 | −44 | −49 |
| 2010–2030 | −35 | −64 | −113 | −71 | −100 | −149 |
| 2015–2030 | −23 | −73 | −103 | −44 | −94 | −124 |

Source: Author's calculations based on PCO (2012)

on labour force and the three assumptions on employment proposed above. A negative value indicates that the increase in labour supply is not sufficient to satisfy the increase in labour demand so the labour market is characterized by a structural shortage of labour supply. A positive value measures a potential increase in unemployment.

Our computations reveal that China's labour force will be insufficient even in the ongoing 5-year interval, the only exception being the scenario A2 characterized by constant participation rates and constant employment (scenario A2). In the other five scenarios, between 2010 and 2015, the total labour needs range between a minimum of 5 million in scenario B2 and a maximum of 27 million in scenario B1 (in both scenarios participation rates are projected to decline slightly, but in the former employment is held constant while in the latter it is projected to increase by 3 % in line with the World Bank assumption about trends in working-age population). In the following 15 years, China will be affected by structural labour shortages under all scenarios, with a total shortage ranging from a minimum of 23 million in scenario A1 (constant participation rates and declining employment) and a maximum of 124 million in scenario B3 (declining participation rates and increasing employment).

The next step is to use our TLN to produce demographic scenarios starting from alternative projections of WAP. Table 12.7 reports the natural balance, the migration balance and the total balance of WAP in the 6 TLN scenarios, while in Table 12.8 we have reported the projection of WAP in the 6 scenarios and a comparison with a migration-free scenario.

In all scenarios the migration balance is largely positive, the level being positively related to the increase in employment (and therefore, *ceteris paribus*, to economic growth) and negatively related to labour market participation. Given the latitude of our assumptions, the range is quite large, going from a minimum of around 38 million to a maximum of 162 million. Moreover, the migration balance is expected to

**Table 12.7** Projected working-age population, natural balance, migration balance and total balance under six alternative labour market scenarios between 2010 and 2030

| | Natural balance (millions) | | | | | |
|---|---|---|---|---|---|---|
| 2010–2015 | 1.1 | | | | | |
| 2015–2020 | −20.1 | | | | | |
| 2020–2025 | −11.0 | | | | | |
| 2025–2030 | −33.6 | | | | | |
| 2010–2030 | −63.7 | | | | | |
| Scenarios | Scenario A1 Labour force at constant participation rates and declining employment | Scenario A2 Labour force at constant participation rates and constant employment | Scenario A3 Labour force at constant participation rates and increasing employment | Scenario B1 Labour force at declining participation rates and declining employment | Scenario B2 Labour force at declining participation rates and constant employment | Scenario B3 Labour force at declining participation rates and increasing employment |
| | *Net migration (millions)* | | | | | |
| 2010–2015 | 12.0 | −1.6 | 10.5 | 26.7 | 5.3 | 25.3 |
| 2015–2020 | 2.4 | 17.9 | 33.1 | 12.1 | 27.6 | 42.8 |
| 2020–2025 | 9.4 | 25.3 | 36.3 | 10.3 | 26.2 | 37.2 |
| 2025–2030 | 14.0 | 38.4 | 44.2 | 26.6 | 51.0 | 56.7 |
| 2010–2030 | 37.8 | 80.0 | 124.1 | 75.8 | 110.1 | 162.1 |
| | *Total balance (millions)* | | | | | |
| 2010–2015 | 13.0 | −0.5 | 11.6 | 27.8 | 6.3 | 26.3 |
| 2015–2020 | −17.7 | −2.2 | 13.0 | −8.0 | 7.5 | 22.7 |
| 2020–2025 | −1.6 | 14.3 | 25.3 | −0.7 | 15.2 | 26.2 |
| 2025–2030 | −19.6 | 4.8 | 10.5 | −7.1 | 17.3 | 23.1 |
| 2010–2030 | −25.9 | 16.3 | 60.4 | 12.1 | 46.4 | 98.4 |

Source: Author's calculations based on PCO (2012)

become very consistent, especially between 2015 and 2020, and between 2025 and 2030, when immigrants are projected to total between 3 and 11 million per year, depending on the scenario.

As just seen (Table 12.7), in absence of migration, WAP is projected to decline by almost 64 million. If the borders are open to the needed labour force, WAP declines only in scenario A1 characterized by a notable decrease in employment, while the specific participation rate remains constant at the current very high level of 71 %. In all the other five scenarios, WAP is projected to increase by a minimum of 12 million in scenario B1 to a maximum of almost 100 million in scenario B3 (Table 12.8).

### *12.5.3 Other Demographic Implications*

Positive net migration would have other relevant impacts, notably on the number of births, total population and the ageing process.

**Table 12.8** WAP in a scenario without migration and in six alternative labour market scenarios between 2010 and 2030

| | Working-age population (millions) | | | | | | |
|---|---|---|---|---|---|---|---|
| 2010 | 993 | | | | | | |
| | No migration | Scenario A1<br>Labour force at constant participation rates and declining employment | Scenario A2<br>Labour force at constant participation rates and constant employment | Scenario A3<br>Labour force at constant participation rates and increasing employment | Scenario B1<br>Labour force at declining participation rates and declining employment | Scenario B2<br>Labour force at declining participation rates and constant employment | Scenario B3<br>Labour force at declining participation rates and increasing employment |
| 2015 | 994 | 1,006 | 992 | 1,004 | 1,020 | 999 | 1,019 |
| 2020 | 974 | 988 | 990 | 1,017 | 1,012 | 1,006 | 1,042 |
| 2025 | 963 | 986 | 1,004 | 1,042 | 1,012 | 1,022 | 1,068 |
| 2030 | 930 | 967 | 1,009 | 1,053 | 1,005 | 1,039 | 1,091 |
| Change 2010–2030 | −63 | −25.9 | 16.3 | 60.4 | 12.1 | 46.4 | 98.4 |

Source: Author's calculations based on PCO (2012)

The great majority of economic migrants are young and, in the case of China, we can assume that at least 50 % will be women, especially given that a considerable share of demand for foreign labour will come from the service sector and from families (World Bank 2012). Migrants will probably come from countries less advanced in the demographic transition and will therefore be characterized, at least initially, by higher fertility rates.

In order to capture this impact of migration we computed the number of births under the two extreme scenarios (A1 and B3) and under the intermediate scenario (A2) by adopting the following assumptions: (i) 50 % of the migrants are women of reproductive age; (ii) their TFR is equal to that of local women; (iii) the TFR remains constant at the current level.

According to our projection, between 2010 and 2030, in absence of migration, the number of women of reproductive age will decline by 23 %. With constant age-specific fertility rates, this would imply a decline of approximately 3.5 million births, the annual total dropping to around 11.6 million. In our three alternative scenarios, the decline in births is less pronounced. In fact, under our assumptions, the higher the rate of economic growth, the higher the immigration flows and the stronger the impact on the number of births. In scenario B3 births would decrease only marginally (Table 12.9).

The positive impact on the number of births together with that on WAP will also provoke an increase in total population, positively related to economic growth (Table 12.10).

**Table 12.9** Average annual number of births between 2010 and 2030 in absence of international migration and under three alternative scenarios (millions)

| | No international migration | Scenario A1 Labour force at constant participation rates and declining employment | Scenario A2 Labour force at constant participation rates and constant employment | Scenario B3 Labour force at declining participation rates and increasing employment |
|---|---|---|---|---|
| 2010 | 15.1 | 15.1 | 15.1 | 15.1 |
| 2015 | 14.3 | 14.6 | 14.3 | 14.8 |
| 2020 | 13.1 | 13.4 | 13.4 | 14.5 |
| 2025 | 12.1 | 12.6 | 13.0 | 14.2 |
| 2030 | 11.6 | 12.3 | 13.2 | 14.8 |
| Change 2010–2030 | −3.5 | −2.8 | −1.9 | −0.3 |

Source: Author's calculations based on PCO (2012)

**Table 12.10** Total population by main age groups under alternative scenarios between 2010 and 2030

| | Census | | | | |
|---|---|---|---|---|---|
| | 2010 | 2030 | | | |
| | | No Migration | Scenario A1 Labour force at constant participation rates and declining employment | Scenario A2 Labour force at constant participa-tion rates and constant employment | Scenario B3 Labour force at declining participation rates and increasing employment |
| | *Absolute values (millions)* | | | | |
| 0–14 | 221 | 191 | 197 | 201 | 218 |
| 15–64 | 993 | 930 | 967 | 1,009 | 1,091 |
| 65+ | 123 | 251 | 251 | 251 | 251 |
| Total | 1,337 | 1,365 | 1,410 | 1,458 | 1,560 |
| | *Percentage composition* | | | | |
| 0–14 | 16.6 | 14.0 | 14.0 | 13.8 | 13.9 |
| 15–64 | 74.3 | 68.1 | 68.6 | 69.2 | 69.9 |
| 65+ | 9.2 | 18.4 | 17.8 | 17.2 | 16.1 |
| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Author's calculations based on PCO (2012)

While ageing is an unavoidable consequence of the demographic transition, its social impact cannot be fully independent of the level and typology of economic growth.

According to the UN-WPP, the total dependency ratio[15] (TDR) in China has been progressively declining since it peaked at 810 per 1,000 persons aged 15–64

[15] The TDR is given by the sum of the youth dependency ratio (YDR) and of the old-age dependency ratio (ODR). The YDR is given by the ratio between children in the age group 0–14 and WAP, while the ODR is given by the ratio between the elderly (65+) and WAP.

**Table 12.11** Demographic and economic dependency ratios in China in 2010 and alternative scenarios for 2030

| | 2010 (Census data) | 2030 | | |
|---|---|---|---|---|
| | | Scenario A1 | Scenario A2 | Scenario B3 |
| | | Labour force at constant participation rates and declining employment | Labour force at constant participation rates and constant employment | Labour force at declining participation rates and increasing employment |
| *Demographic dependency ratios* | | | | |
| | *Absolute values (per 1,000 people of working age)* | | | |
| YDR | 223 | 204 | 199 | 199 |
| ODR | 124 | 260 | 249 | 230 |
| TDR | 347 | 464 | 448 | 430 |
| | *Percentage composition* | | | |
| YDR | 69.4 | 44.0 | 44.4 | 46.4 |
| ODR | 30.6 | 56.0 | 55.6 | 53.6 |
| TDR | 100.0 | 100.0 | 100.0 | 100.0 |
| *Economic dependency ratios* | | | | |
| | *Absolute values (per 1,000 people of working age)* | | | |
| EYDR | 310 | 288 | 281 | 284 |
| EIDR | 388 | 409 | 411 | 426 |
| EODR | 172 | 366 | 352 | 329 |
| ETDR | 870 | 1,063 | 1,043 | 1,039 |
| | *Percentage composition* | | | |
| EYDR | 35.6 | 27.0 | 26.9 | 27.4 |
| EIDR | 44.6 | 38.5 | 39.4 | 41.0 |
| EODR | 19.8 | 34.5 | 33.7 | 31.6 |
| ETDR | 100.0 | 100.0 | 100.0 | 100.0 |

*YDR* youth dependency ratio, *ODR* old-age dependency ratio, *TDR* total dependency ratio, *EYDR* economic youth dependency ratio, *EIDR* economic inactive (of working age) dependency ratio, *EODR* economic old-age dependency ratio, *ETDR* economic total dependency ratio
Source: Author's calculations based on PCO (2012)

years in 1965. It reached a minimum of 360 (or of 347 according to the 2010 census data) in 2010 and is projected to climb back towards the previous maximum without reaching it, at least during this century. However, while in 1965 92% of all dependents were young, by 2030 more than one in two will be elderly (Table 12.11).

According to the 2010 census data, there were 347 dependents per 1,000 people of working age in 2010, among whom 223 young and 124 elderly. These values are very similar to those proposed by UN-WPP. Over the next 20 years, the TDR will increase but its level will be affected by economic growth and a consequent number of immigrants, so that the 2030 TDRs are inversely related to the rate of economic growth, with a value of 430 in scenario B3 and 464 in scenario A1[16] (Table 12.11).

[16] The percentage of old people is expected to increase substantially from around 36% to around 55%.

It is the employed who produce the income to support themselves and the dependent population, while the WAP includes a sometimes significant share of people (e.g. students, early retirees and housewives) who do not support others, but are supported. It is therefore evident that purely demographic indicators of dependency produce a misleading measure of the phenomenon. Moreover they are especially unsuitable in the case of long-term projections since the definition of WAP will certainly change in a not too distant future due to the progressive lengthening of initial education and the postponement of retirement. A simple solution is to compute an economic total dependency ratio (ETDR) substituting employment to WAP (Bruni 2009, 2013a). This economic indicator (i) solves the problem of imputing the burden solely to those who actually support dependents, (ii) will continue to apply no matter what the future definition of WAP, (iii) allows disaggregating the dependents into subcategories such as students, unemployed, housewives, other working-age inactive, retired, other elderly,[17] and (iv) allows estimating the extent to which the changes in the ratio have been determined by demographic trends or by the capacity (or incapacity) of the economic system to create additional jobs. It would also provide better reference points for assessing employment, and active labour market policies, as well as measures in the areas of education and welfare.

In 2010, for every 1,000 employed persons there were 870 dependents (second part of Table 12.11). Given the very high employment rate, it is quite surprising to observe that the working-age inactive represented the highest share of dependents (44.6%), while the young and the elderly accounted for just 35.6 and 19.8%, respectively. The ETDR is projected to exceed 1,000 by 2030. The combination of different assumptions on the employment level and on the participation rates affects the ETDR and its components. We can point out that:

- The percentage of young people declines, but reaches its maximum in the scenario with the highest rate of growth in employment;
- The percentage of the elderly increases significantly, but reaches its maximum in the scenario with the lowest increase in employment;
- The percentage of inactive declines, the maximum decrease being registered in Scenario A1.

In conclusion, our model shows that, in a situation where the demographic transition is producing a natural decline in WAP, economic growth based not only on productivity but also on employment will provoke an increase in WAP, and an even more pronounced increase in total population, while easing the unavoidable ageing phenomenon. These results are in net contrast with those proposed by the standard projection model adopted by the United Nations and numerous national institutes of statistics (O'Neill et al. 2001).

[17] In this chapter we will limit ourselves to measuring the economic youth dependency ratio (EYDR), the economic inactive (of working age) dependency ratio (EIDR), and the economic old-age dependency ratio (EODR). The economic total dependency ratio is the sum of these three ratios.

Our estimates of the population structure in 2030 based on the 2010 census data suggest that in the following three decades, exits from the working-age population will total almost 640 million, i.e. more than 21 million per year on average. In order to keep WAP constant, natural entries into WAP (i.e. the number of births between 2015 and 2045) would have to be similar in number and present a similar time distribution to avoid cyclical problems. As we have already shown, it would already be a great achievement if the annual number of births were to remain at around 15 million per year from 2015 and 2030. This would require either a number of immigrants sufficient to maintain a constant number of women of reproductive age or an abrupt increase in the TFR to above-replacement level, or a combination of these two solutions. In this case, WAP would decline by only around 100 million between 2030 and 2045, a result that seems quite improbable. To bridge the gap between entries and exits in the following 15 years, the necessary conditions would be even more difficult to meet. As already indicated by UN-WPP, this implies that China will be affected by a more pronounced decline in WAP, and therefore in its labour force, between 2030 and 2060 than between 2015 and 2030.

## 12.6 Discussion and Concluding Remarks

The most important results of the present analysis are that between 2015 and 2030, China will be affected by a much sharper decline in its working-age population (ages 15–64) than that suggested by the UN-WPP and that, *ceteris paribus*, the phenomenon will accelerate over the following 30 years. Due to the contraction of participation rates that generally follows the increase in average duration of schooling for both men and women, the decline in the actual labour force will be larger than the decline in the working-age population. China will thus be affected by a structural shortage of labour supply, a situation where variations in real wage levels are not sufficient to maintain labour market equilibrium.[18] It is also evident that in order to solve the problem and reach a natural equilibrium of WAP, generational entries should be equal to generational exits. However, even this may not be sufficient to balance labour demand and supply, in particular if the level of employment increases.

While the need to address the labour supply shortage induced by the declining working-age population is universally recognized, it is by no means clear how China's government might remedy this problem.

The economic growth of the last 25 years has produced a very complex and fragmented social-economic landscape: the Chinese provinces greatly differ not only

[18] From now on, labour shortages will become increasingly evident and widespread, creating growing upward wage pressure that will affect not only the coastal areas and foreign companies, but could also spread to other areas, depending on the reallocation of the manufacturing sector in the surrounding provinces. This will be accompanied by a growing awareness among workers of opportunities to fight not only for higher wages, but also for better working conditions. A phase of labour organization characterized by greater institutional independence of labour unions is therefore to be expected (Cai et al. 2009; Garnaut 2010; Park et al. 2010).

with regard to natural resources, production structure, endowments of technology and physical infrastructures,[19] but also in terms of their position on the path of demographic transition, and the educational attainment of the labour force (Bruni and Tabacchi 2011; Sakamoto 2011; Sakamoto and Islam 2008). In recent decades, this uneven development has led to massive internal migration flows from western and central provinces to the more developed coastal areas due to a structural shortage of local labour supply in the fast developing urban and coastal areas and a concomitant surplus in rural areas and inland provinces (Bruni and Tabacchi 2011; Cai 2006).

But the projected future trends in China's overall working-age population indicate that these internal migration flows will necessarily slow down and even dry up in the coming decades, in conjunction with a gradual increase in the number of provinces characterized by a labour supply shortage and a concentration of local labour surpluses in a declining number of provinces. The labour supply shortage in coastal areas and the ensuing pressure on wages[20] may thus lead to an upgrading of the manufacturing sector, along with a need to define alternative locations for new economic clusters and labour-intensive activities.

### *12.6.1 Lift Restrictions on Internal Mobility*

In the coming years, China could try to reduce the shortage of labour supply by reducing the high cost of restrictions on internal mobility, a goal that could be pursued by abolishing the household registration system (*hukou*) (Inset 4.1 p. 66) to facilitate the matching of labour supply and demand within the country.

The situation of the rural migrants in cities (i.e. the "floating population") is very similar to that of illegal immigrants in western countries. Confronted with the problem they had themselves created through inappropriate migration policies, western countries had no choice but to regularize immigrants that were providing the necessary manpower for their economic systems. These decisions were not determined by ethical considerations, but were taken to guarantee a regular functioning of the labour market, and avoid the problems generated by exploitation of undocumented workers.

A well functioning labour market requires internal mobility. This is the standard means whereby the market pursues efficient allocation of the human resources present on a given territory. In western societies, workers can freely move from one area to another, maintaining the right to the same social services. In China, the legislation on residence permits has generated a two-tier society, the population being

[19] In the last 10–15 years, the enormous drive to develop private industry, largely fuelled by foreign direct investments, has been concentrated mainly on a few coastal provinces that offer relative advantages in terms of transport, physical infrastructure and human resources.

[20] According to recent estimates China's real wages could approach $1,000 per month within a decade (Vandana et al. 2012).

divided into two components that differ substantially in terms of rights and social protection (Cai et al. 2009).[21]

Given their age structure and education profile, the workforce currently employed in the agriculture sector will not represent a major potential source of labour supply. The large majority of their descendants could, however, respond to future demand in the modern sectors for young educated people moving to urban areas and to the provinces where economic development will be more sustained and where the number of young people entering the working phase of life will be largely insufficient. A top priority for the Chinese Government should therefore be to raise educational standards in rural areas.

### *12.6.2 Raise Retirement Age*

Another measure China could consider is an increase in the retirement age. Such a measure would represent a coherent response both to the increase in average age of labour market entry resulting from the longer time spent in education by the incoming generations, and to China's ongoing increase in life expectancy. From a flow perspective, this measure creates only a temporary window during which the exits from the working-age population decline. Flows then revert practically to their previous level after a number of years equal to that of the increase in legal retirement age. However, from a stock perspective, it has the permanent effect of increasing the number of cohorts co-present in the labour market. It must be pointed out, however, that the stock effect will also be limited. The participation rate in the 60–69 age-group is already relatively high,[22] while the average duration of schooling will progressively increase as per capita income rises.

### *12.6.3 End the One-Child Policy*

The most effective long-run policy would be the abolition of the current birth control policy, especially if we keep in mind that an increase in births today would not affect labour supply for more than 20 years (Wang 2005). Even if this policy did contribute to the Chinese economic miracle — although its real impact remains difficult to ascertain and should not be overestimated — it would be counterproductive for the future equilibrium of the working-age population (Wang 2005; Greenhalgh 2008).

[21] It has also been shown that informal urban employment—that represents the most probable outcome of rural migration—implies higher working intensity and relatively lower pay, together with less social protection, while migrants have to accept the less attractive jobs that urban residents refuse (Cai et al. 2009, p. 17).

[22] In 2010 the participation rates of the 60–64 and 65–69 age-groups were respectively 49.5 and 36.3 %.

While it is evident that the one-child policy no longer serves a useful purpose, the extent to which its abolition would foster demographic equilibrium is not clear. While in the short run the unfulfilled desires of a certain number of couples and of their extended families could generate a small baby boom, it seems probable that the process of urbanization, the increase in women's educational level and changes in the traditional vision of the family would soon bring the TFR back to the initial value or even below (Zheng et al. 2009; Cai 2010). The evidence of the countries affected by a similar phenomenon is that in a situation of growing average income, fertility presents an extremely high inertia. This suggests not only that all legal restrictions to reproduction should be abolished, but also that social and economic measures aimed at preventing the TFR from continuing along the present negative path could help alleviate the shortage of labour supply in the long term.

### *12.6.4 Increase Labour Productivity and Delocalize Production*

An increase in labour productivity and a delocalization of production act on the demand-side, reducing, *ceteris paribus*, the need for local labour. Some Chinese scholars have supported the thesis that an increase in labour productivity — for instance by improving the educational attainment of human resources (Vernon Henderson 2009; Wilton 2010) and making their allocation increasingly efficient and relevant to the needs of the production system — could be a solution to the labour supply shortage (Cai 2006, 2007).[23] This viewpoint was also presented in a more detailed manner in a World Bank Report written with the Development Research Centre of China's State Council (World Bank 2012). However, the impact of such a choice would be necessarily limited. In recent decades, most of the gains in China's productivity have been achieved by moving the rural surplus labour force in agriculture to higher-productivity manufacturing and service-sector activities in urban areas (Vernon Henderson 2009). But this was a one-off phenomenon that can hardly be repeated.

Concerning the delocalization of production, it must be noted that:

- China will be only one, albeit the biggest one, of many countries looking for suitable places to delocalize production, a strategy that is already pursued mainly in Southeast Asia, with major organizational efforts and technical capacity, by Taiwan, Japan and Korea;
- Therefore, not only will China's labour needs be far greater than those of the other countries in the same situation, but China will have to compete with better organized and more experienced nations and their specialized institutions;
- China's labour needs will increase to unprecedented levels after 2030, while the number of countries with surplus labour supply will progressively decline;

[23] Already at the beginning of 2006, this solution was proposed by Cai Fang, Director of the Institute of Population and Labour Economics of the Chinese Academy of Social Sciences, the first to state that "China's oversupply of labour is on its way to becoming a thing of the past" (Cai 2006).

- Finally, not everything can be produced abroad, and should the shortage of labour supply become even more acute, as seems unavoidable, strategic decisions will have to be taken.

In conclusion, delocalization cannot provide a complete solution to the problem of labour shortage. Moreover, this strategy will need careful planning and the creation of specialized institutions to sustain the delocalization process.

### *12.6.5 Open the Country to International Migration*

In recent decades, when the countries most advanced in the demographic transition have been confronted by a structural shortage of labour supply, most economists and demographers have supported the position that the decline in WAP, and therefore in labour supply, could be addressed by increasing productivity, delocalizing production and implementing policies aimed to increase labour force participation of specific groups (women, older adults) (Bouvier 2001; Coleman 2000; Golini 1994).[24] In reality, abundant empirical evidence supports the conclusion that all these countries, with the partial exception of Japan, have addressed their structural shortage of labour supply with immigration flows that have generally been above replacement level and have increased the WAP, improved fertility and contributed to total population growth (Bruni 2013b). There is no doubt that such an alternative might provide a means for China to offset the structural shortage of labour supply, and therefore contribute to reducing the negative impact of the demographic transition on fertility and ageing.

China would need a sustained high rate of economic growth to raise the standard of living of its population to a level comparable to that of western countries. However, to reach this goal, China will certainly have to resort to international immigration. Policies could be introduced to attract young foreigners to study in Chinese schools and universities and then facilitate their stay in the country, and to promote and facilitate the return of the Chinese living and working abroad. While we cannot expect the results to be quantitatively very significant, returning migrants can play a useful socioeconomic and cultural role, and student immigration would provide a foreign labour force with knowledge of the Chinese language and way of life.

China should therefore consider the lessons coming from the countries that have already experienced a structural shortage of labour supply. A vision based on the view — often justified only in ideological terms — that no foreign labour was needed has provoked in all these countries the adoption of restrictive immigration policies that have failed to interrupt the large immigration flows required by the market, while providing a lucrative activity for criminal organizations, and causing the death of thousands of immigrants (Shelley 2007). At the same time, such measures have allowed local enterprises to exploit an irregular labour force without any contractual power, while the presence of a growing number of illegal migrants has

[24] For a detailed analysis of the Italian case.

resulted in social tensions and made it necessary to implement frequent and costly legalization procedures (Anderson 2010).

In terms of migration, China therefore has two alternatives. It can follow the "example" of the developed world and fall into the trap of allowing the shortage of labour supply to be filled by irregular immigrants, with all the consequences previously outlined. Alternatively, it can break with this "tradition" and seek to govern the phenomenon to the advantage of its own citizens, and in keeping with its international reputation. Chinese economic policies have always followed a very pragmatic approach. It is to be hoped that in this case too, China will take a pragmatic attitude, governing immigration flows in an appropriate and humane way, within a far-sighted institutional framework.

Such an approach could also provide strong support for China's international policy. The need for foreign labour could represent a powerful political and economic tool for a country that needs natural resources often available in countries affected by a growing excess of labour supply. The need for foreign labour forecast in the present study also implies that China could play a major role in kick-starting and sustaining economic development in departure countries, not only by delocalizing labour-intensive production processes, but also by providing opportunities for substantial flows of remittances. This would strongly enhance China's growing political leadership role in the global arena.

## References

Anderson, B. (2010). Migration, immigration controls and the fashioning of precarious workers. *Work, Employment & Society, 24*(2), 300–317.

Bouvier, L. F. (2001). Replacement migration: Is it a solution to declining and aging population? *Population and Environment, 22*(4), 377–381.

Bruni, M. (1988). A stock flow model to analyze and forecast labor market variables. *Labor, 2*(1), 55–116.

Bruni, M. (2009). The century of the Great Migration. Demographic forecasts, migration, and transition theory: A labor market perspective. *Papeles de Poblacion, 15*(62), 9–73.

Bruni, M. (2011). China's new demographic challenge: From unlimited supply of labor to structural shortage of labor supply. Labor market and demographic scenarios: 2008–2048. Department of Political Economy, University of Modena and Reggio. Working Paper 643. http://www.dep.unimore.it/materiali_discussione/0643.pdf. Retrieved 26 Nov 2013.

Bruni, M. (2012). Migration and demographic projections: A new methodology to jointly build labor market and demographic scenarios. *Genus, 68*(3), 1–26.

Bruni, M. (2013a). Labor market and demographic scenarios for ASEAN countries (2010–2035): Education, skill development, manpower needs, migration flows and economic growth. DEMB Working Paper Series, 6. http://merlino.unimo.it/campusone/web_dep/wpdemb/0006.pdf. Retrieved 26 Nov 2013.

Bruni, M. (2013b). China between economic growth and mass immigration. *China & World Economy, 21*(2), 56–77.

Bruni, M., & Tabacchi, C. (2011). Present and future of the Chinese labor market. Dualism, migration and demographic transition. Department of Political Economy, University of Modena and Reggio. Working Paper 647.

Cai, F. (2006). *Renkou zhuanbian de shehui jingji houguo (Social and economic consequences of population change)*. Beijing: Shehui kexue wenxian chuban she.

Cai, F. (2007). How to deal with the future labor shortage? China Daily. http://www.chinadaily.com.cn/bizchina/2007-03/09/content_823785.htm. Accessed 26 Nov 2013.

Cai, F. (2008a). Approaching a triumphal span: How far is China towards its Lewisian turning point? WIDER Research Paper, 9. http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en_GB/rp2008-09/. Retrieved 26 Nov 2013.

Cai, F. (2008b). *Liuyisi zhuan guaidian (Lewis turning point: A coming new stage of China's economic development)*. Beijing: Shehui kexue wenxian chuban she.

Cai, Y. (2010). China below replacement fertility; government policy or socio-economic development? *Population and Development Review, 36*(3), 419–440.

Cai, F., & Wang, M. Y. (2006). Challenge facing China's economic growth in its aging but not affluent era. *China & World Economy, 14*(5), 20–31.

Cai, F., Du, Y., & Wang, M. (2009). Migration and labor mobility in China. United Nations Development Programme. Human Development Research Paper, 9.

Caldwell, J. (1982). *Theory of fertility decline*. New York: Academic Press.

Coleman, D. A. (2000). *Who is afraid of low support ratios? A UK response to the United Nations Population Division report of replacement migration*. Paper presented at the Expert Group meeting on Policy Responses to Population Aging and Population Decline. New York, 16–18 Oct.

Das, M., & N'Diaye, P. (2013). Chronicle of a decline foretold: Has China reached the Lewis turning point? IMF Working Paper, WP/13/26.

Garnaut, R. (2010). *Macro-economic implications of the turning point*. Paper presented at the International Workshop jointly organized by the Institute of Population and Labor Economics (CASS) and the China Center for Economic Research (PKU). Beijing, 6th April.

Golini, A. (1994). Le tendenze demografiche dell'Italia in un quadro europeo. Analisi e problemi per una politica per la popolazione. In A. Golini (Ed.), *Tendenze Demografiche e Politiche per la Popolazione. Terzo rapporto IRP sulla situazione demografica italiana*. Bologna: Il Mulino.

Greenhalgh, S. (2008). *Just one child: Science and policy in Deng's China*. Berkeley: University of California Press.

Huang, Y. P., & Jiang, T. S. (2010). What does the Lewis turning point mean for China: A computable general equilibrium analysis. CCER Working Paper E2010005. http://en.ccer.edu.cn/download/6827-1.pdf. Retrieved 3 Oct 2013.

Jones, G. W., & Douglas, R. M. (1997). Introduction. In G. W. Jones, R. M. Douglas, J. C. Caldwell, & R. M. D'Souza (Eds.), *The continuing demographic transition*. Oxford: Oxford University Press.

Lutz, W., Sandersen, W., & Scherbov, S. (2001). The end of world population growth. *Nature, 412,* 543–545.

O'Neill, B. C., Balk, D., Brickman, M., & Ezra, M. (2001). A guide to global population projections. *Demographic Research, 4,* 203–288.

Park, A., Cai, F., & Du, Y. (2010). Can China meet her employment challenges? In J. Oi, S. Rozelle, & X. Zhou (Eds.), *Growing pains: Tensions and opportunities in China's transformation*. Stanford: Asia-Pacific Research Center.

PCO. (2012). *Population census Office and National Bureau of Statistics of China. Zhongguo 2010 nian renkou pucha ziliao (Tabulation on the 2010 Population Census of the People's Republic of China)*. Beijing: Statistics Press.

Skelton, R. (2011). China: An emerging destination for economic migration. Migration Information Source. http://www.migrationinformation.org/Profiles/display.cfm?ID=838. Retrieved 3 Oct 2013.

Sakamoto, H. (2011). Provincial economic growth and industrial structure in China: An index approach. The International Centre for the Study of East Asian Development, Working Paper Series, 1.

Sakamoto, H., & Islam, N. (2008). Convergence across Chinese provinces: An analysis using Markov transition matrix. *China Economic Review, 19*(1), 66–79.

Shelley, T. (2007). *Exploited: Migrant labor in the new global economy*. London: Zed Books.

UN-PD. (2004). *United Nations population division. World population to 2300*. New York: United Nations.

UN-WPP. (2012). United Nations. World population prospects. The 2012 Revision. http://esa.un.org/wpp/. Accessed 26 Nov 2013.

Vandana, S., Lin, J. Y., & Wang, Y. (2012). Leading dragons phenomenon. New opportunities for catch-up in low-income countries. Policy Research Working Paper, WPS 6000, World Bank Institute.

Venturini, A. (2001). *Le migrazioni nei paesi del Sud Europa*. Torino: UTET Libreria.

Vernon Henderson, J. (2009). Urbanization in China: Policy issues and options. China Economic Research and Advisory Programme. http://www.s4.brown.edu/china2012/Papers/Final%20Report%20format1109summary.pdf. Retrieved 26 Nov 2013.

Wang, F. (2005). Can China afford to continue its one-child policy? Asia Pacific Issues, 77. http://www.eastwestcenter.org/fileadmin/stored/pdfs/api077.pdf. Retrieved 26 Nov 2013.

Wilton, N. (2010). *An introduction to human resource management*. London: Sage Publications.

World Bank. (2012). *China 2030: Building a modern, harmonious, and creative high-income society*. New York: The World Bank.

Zheng, Z., Cai, Y., Wang, F., & Gu, B. (2009). Below-replacement fertility and childbearing intentions in Jiangsu province, China. *Asian Population Studies, 5*(3), 329–347.

# Chapter 13
# The Economic Support System and Changing Age Structure in China

**Sang-Hyop Lee and Qiulin Chen**

## 13.1 Introduction

China has experienced extraordinary development since its planned market-oriented reform was launched in 1978. Between 1978 and 1990, real GDP per capita grew at an annual rate of 9%. Growth was spectacular between 1991 and 2011, reaching 10.4% annually. Since 1991, the real per capita GDP growth rate has ranged from 7.6 to 14.2%. It was highest in 1992, but fell to 7.8% in 1998 and further decreased to 7.6% in 1999, the lowest growth rate in China since 1990. The GDP growth rate rebounded in 2000 and had fully recovered by 2003. It does not appear to have fallen during or after the outbreak of SARS in 2003.

There were also substantial changes in population age structure during the same period. The youth dependency ratio[1] decreased from 41.1% in 1995 to 35.4% in 2002, and dropped again to 28.9% in 2007. At the other end of the scale, the old-age dependency ratio[2] increased from 9.6% in 1995 to 10.6% in 2002, and to 10.9% in 2007. As a result, the population age structure in China changed substantially over a short period of time (Fig. 13.1).

The purpose of this chapter is to provide insight into some important features of the recent changes in intergenerational resource allocation in China, and to emphasize the importance of support systems for economic growth and other policy issues. The present analysis is based on various national data sets for three periods, 1995, 2002, and 2007, together with the international database of National Transfer

[1] The youth dependency ratio is defined here as the ratio of children aged below 15 to the population aged 15–64.

[2] The old age dependency ratio is defined here as the ratio of older adults aged 65 and above to the population aged 15–64.

S.-H. Lee (✉)
Department of Economics, University of Hawaii, Manoa, Honolulu, USA
e-mail: leesang@hawaii.edu

Q. Chen
Chinese Academy of Social Sciences, Beijing, China
e-mail: qlchen@vip.sina.com

I. Attané, B. Gu (eds.), *Analysing China's Population*, INED Population Studies 3,
DOI 10.1007/978-94-017-8987-5_13, 

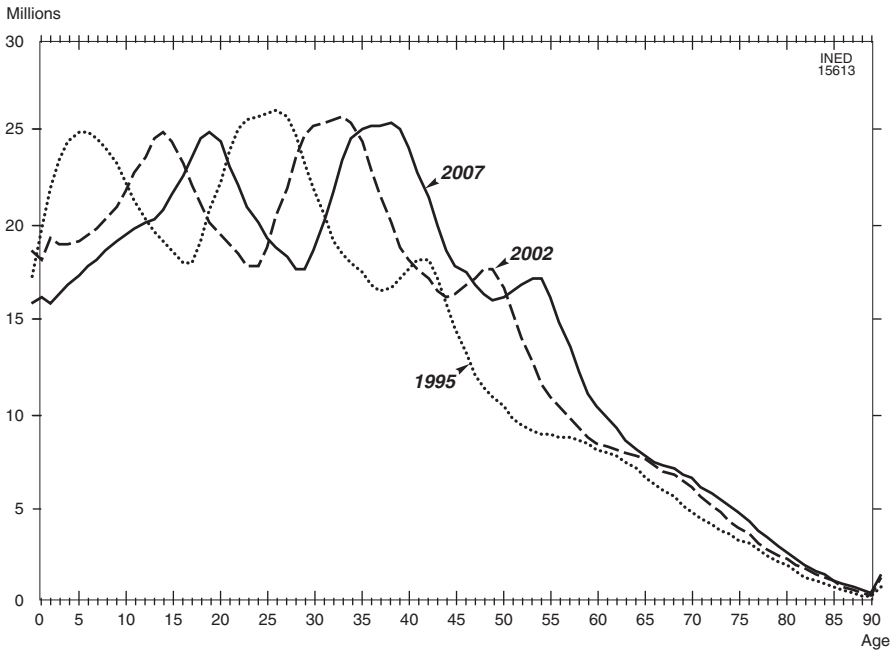



**Fig. 13.1** Population age structure in 1995, 2002, and 2007 (millions) (Source: UN-WPP 2012)

Accounts (NTA),[3] which measure how people at each age in the life cycle acquire and use economic resources.

The chapter is composed of four sections. A first section provides very brief background information about the Chinese economy and China's demographic transition between 1995 and 2007. A second section provides the results by age groups, by sectors such as health and education, and by type of support mechanism, such as transfers versus asset-based reallocations. The last section examines the implications of results, especially those concerning support systems for economic growth and other policy issues in China's socioeconomic context.

## 13.2 Application of National Transfer Accounts (NTA) in China

The purpose of the National Transfer Accounts (NTA) database is to measure at the aggregate level, in a manner consistent with National Income and Product Accounts (NIPA), the reallocations across ages of economic resources. The methodological details are not discussed here, but some important aspects for constructing estimates are given below.

[3] National Transfer Accounts (NTA). Available at www.ntaccounts.org.

The young and the old have a life-cycle deficit because they produce less through their labour than they consume. Conversely, working-age adults have a life-cycle surplus because they produce far more through their labour than they consume. Age reallocations occur because of this; at some ages, individuals consume more than they produce, while at others, individuals produce more than they consume. The reallocation system consists of a set of complex institutions and practices whereby the young and the old, those with life-cycle deficits, draw on the surplus resources generated during the prime working ages (Lee 1994).

The economic mechanisms used for age reallocations fall into two broad categories: transfers and asset-based reallocations. A defining feature of transfers is that they involve no explicit *quid pro quo,* or exchange of money for goods or services. Resources flow from one party to another either voluntarily, in the case of private transfers, or as public transfers. Asset-based reallocations realize inter-age flows through inter-temporal exchange. For example, an asset can be acquired in one period generating an outflow at that age, and disposed of in a subsequent period generating an inflow at an older age. More generally, asset-based reallocations involve two kinds of flows — asset income and saving. When individuals accumulate personal saving during their working years and rely on asset income and dissaving of those assets during their non-working years, they are relying on asset-based reallocations. Or when individuals borrow to finance their education, they are relying on asset-based reallocations to shift resources to young ages, when they are needed, from older ages.[4]

A variety of micro data sets are required to construct the age profiles of NTA. We used nationally representative cross-sectional survey data — the China Household Income Project (CHIP) data for 1995, 2002, and 2007 (CHIP 1995, 2002, 2007) — to construct age profiles for the private components of the NTA. CHIP data originated from surveys conducted by the Chinese Academy for Social Sciences in rural and urban areas. The sampled households were representative subsamples from official household surveys conducted by the National Bureau of Statistics, which collected data on general household and individual characteristics, individual income, household saving and assets, and household expenditures. We constructed public-sector age profiles using administrative data and specialized surveys. To generate the age profile of health expenditures, we used the National Health Services Survey data (NHSS 1996, 2003, 2008). They were administered by the Centre for Health Statistics and Information of the Ministry of Health and covered representative households across all 31 provinces. We rely on enrolment and expenditure data from the Ministry of Education for 1995 to 2007 to construct public education profiles (MOE 1996, 2003, 2008). It is important to understand that the numbers estimated from the micro data sets are used to construct the age profiles, but the numbers are adjusted by aggregate macro controls. For this purpose, the estimates were adjusted to conform to National Income and Product Account estimates (NBS 1996, 2003, 2008).

[4] Readers interested in methodological details might benefit by reading Lee et al. (2008), Mason et al. (2009), or resources materials from the National Transfer Accounts database: http://www.ntaccounts.org.

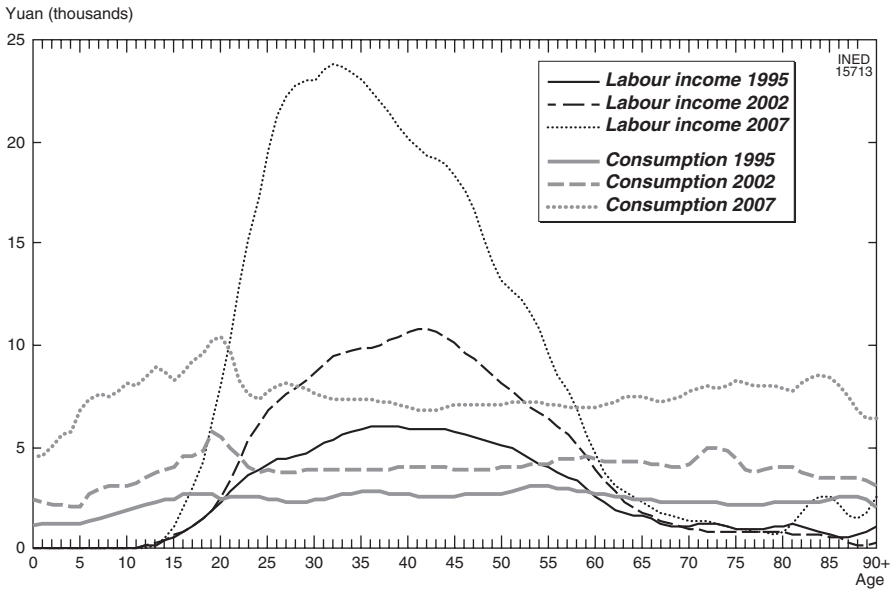



**Fig. 13.2** Life cycle profiles of per capita labour income and consumption: 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org)

## 13.3 Results

### *13.3.1 Economic Life Cycle*

The age profiles of consumption and labour income — the economic life cycle — reflect many factors (Lee et al. 2008), notably population age structure. Reallocations to children are much larger than reallocations to the elderly in current-day China because there are many more children than old people. But the population is ageing rapidly so reallocations to the elderly, as compared with reallocations to children, are increasing substantially. The economic life cycle also reflects behaviours and the factors that influence them — prices, taxes, tastes, etc. Consumption profiles, for example, are influenced by the importance given to education as compared to health care — and the institutional framework that governs these important sectors. Labour income profiles vary with the wage system, the returns to education, educational attainment, the ages at which children leave school and adults retire, and the labour force decisions made by women.

Figure 13.2 shows the life cycle profile of per capita labour income and consumption in China in 1995, 2002, and 2007. The labour income profiles show a remarkable increase in labour income during the period. They also show that labour income is more concentrated on young workers. Age of peak income was 44 years in 1995, but fell to 41 years in 2002 and further decreased to 32 years in 2007. The

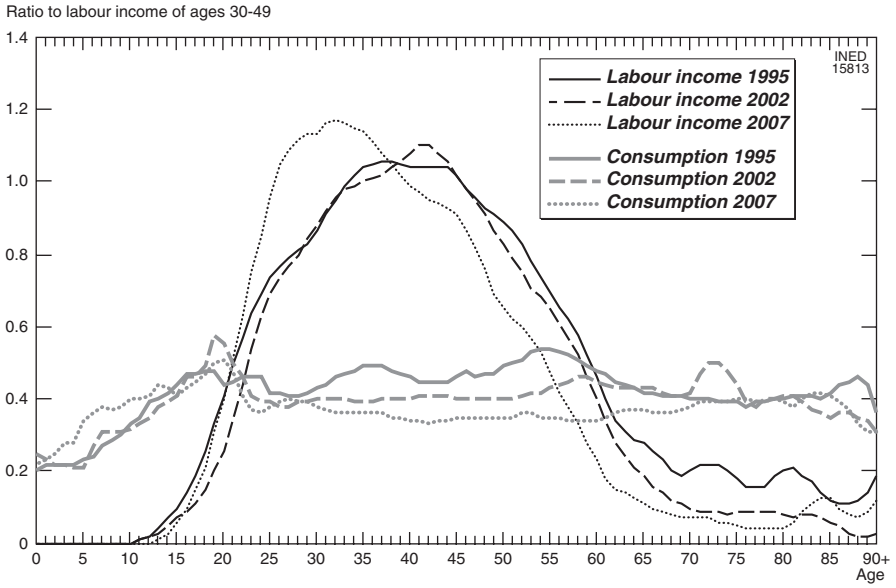



**Fig. 13.3** Life cycle profiles of per capita labour income and consumption: ratio to the average labour income ages 30–49, 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/)

mean age of labour income showed a similar pattern. It decreased from 44.4 years in 1995 to 42.8 in 2002 and 40.3 in 2007.

The share of labour income at ages 65 and older declined substantially from 11.4 % in 1995 to 5.9 % in 2002, and decreased slightly further to 5.5 % in 2007. On the other hand, the share of labour income for young adults aged 20–39 increased substantially over the same period, from 39.5 % in 1995 to 43.0 % in 2002, and then to 53.1 % in 2007. By contrast, the labour income for people in their 40s or 50s has declined sharply since 1995.

The figure also shows that consumption has increased rapidly in a short period of time. Consumption peaks in the late teens and then declines until the 40s. A similar consumption pattern is also found in other countries, such as South Korea, as a result of decreasing expenditure on education after the mid-20s. This result may be related to low fertility and very high levels of education consumption among high-school students in China, which is supported by the data. The peak of consumption at high school is much more prominent in 2002 and 2007 than in 1995.

The combined effect of the change in age profiles of labour income and consumption has changed the life-cycle deficit years. The life-cycle surplus decreased from 38 years in 1995 (ages 21–58) to 37 years in 2000 (ages 23–59), and remained unchanged in 2005 (ages 21–57).

Figure 13.3 charts the age profile of labour income and consumption relative to average labour income for adults aged 30–49 each year. It is a rescaled version of Fig. 13.2 obtained by dividing by the simple average of per capita production

**Table 13.1** Annual growth rate of consumption and labour income: by broad age groups

| | Annual growth 1995–2002 | | | | Annual growth 2002–2007 | | | |
|---|---|---|---|---|---|---|---|---|
| % | 0–19 | 20–64 | 65+ | Per capita | 0–19 | 20–64 | 65+ | Per capita |
| Total consumption | 7.5 | 4.9 | 7.3 | 5.9 | 12.4 | 7.5 | 7.7 | 8.8 |
| Public consumption | 10.0 | 8.1 | 12.3 | 8.9 | 16.0 | 14.6 | 14.4 | 14.8 |
| Public education | 16.5 | 12.2 | – | 13.9 | 18.5 | 5.4 | – | 14.1 |
| Public health | −1.4 | 5.9 | 20.2 | 7.0 | 4.0 | 16.2 | 13.5 | 14.9 |
| Public others | 8.2 | 8.2 | 8.2 | 8.2 | 15.1 | 15.1 | 15.1 | 15.1 |
| Private consumption | 6.0 | 4.0 | 5.6 | 4.9 | 9.6 | 4.9 | 4.1 | 6.0 |
| Private education | 11.4 | 19.2 | – | 11.1 | 12.6 | 8.6 | – | 10.1 |
| Private health | 10.3 | 15.9 | 23.4 | 17.0 | 20.1 | 1.0 | 5.6 | 4.8 |
| Housing | 18.6 | 18.1 | 16.0 | 18.8 | 27.2 | 11.2 | 3.8 | 12.6 |
| Other consumption | 3.5 | 1.5 | 1.9 | 2.3 | 5.8 | 4.2 | 3.3 | 4.7 |
| Labour income | 2.7 | 6.4 | −3.1 | 6.9 | 17.9 | 10.0 | 2.3 | 10.7 |
| Compensation | 1.6 | 9.0 | −3.2 | 9.6 | 35.8 | 9.7 | −4.2 | 10.6 |
| Self-employed income | 3.4 | −0.8 | −3.1 | 0.1 | −6.5 | 11.1 | 5.1 | 10.8 |

Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/

between ages 30–49. This normalization makes the estimated profiles more easily comparable by age and also by time period. We divided each age schedule by the unweighted average of per capita labour income of each age over the range 30–49. Thus, for example, a value of 0.5 at some age in consumption implies that a person at that age consumes half the annual amount of production averaged over the prime ages of his/her life. So it presents the changing pattern of age profiles or age targeting of government programmes more clearly. The figure suggests that the labour income of older adults aged 65 and above declined substantially and consistently over the period compared to those aged 30–49. In addition, the labour income of adults aged 40–59 also appears to have declined over time. The figure also shows that the normalized per capita consumption has declined over time for almost all ages 20 and older, while the consumption of children under 20 years, normalized by the average labour income at ages 30–49, increased between 2002 and 2007. Thus, it appears that labour income increased much faster than consumption in China between 1995 and 2007

A further investigation of consumption by component shows some interesting features. Table 13.1 presents real annual growth rates of each consumption component and labour income by broad age group. While per capita labour income increased by only 6.9% per annum between 1995 and 2002, per capita labour income for ages 65 and older decreased by 3.1% per annum during the same period. On the other hand, total consumption rose by 5.9% per annum during the same period, which is lower than the increase in labour income. Total consumption for children ages 0–19 and for the over-65s increased much more than the average, by 7.5 and 7.3% per annum, respectively.

This pattern continued after 2002 until 2007. Although per capita labour income did not decline for the over-65s, this is entirely due to the fact that the increase in self-employment income outweighed the substantial decline in earnings for the elderly. Total consumption increased by 8.8% per annum during the same period, contributing above all to the increase in consumption of children ages 0–19. As a result, the consumption gap between adults aged 20–64 and other age groups in China has widened over time.

Public consumption increased much more rapidly than private consumption for all age groups. It increased by 8.9% per annum between 1995 and 2002, with the highest increase in public education consumption. This is in stark contrast with the 4.9% increase in private consumption per annum for the same period. Between 2002 and 2007, public consumption increased by 14.8% per annum while private consumption increased only by 6.0% per annum. Thus, the low increase in consumption compared with labour income appears to be entirely due to private consumption, which increases more slowly than that of labour income. Among the different age groups, both public and private consumption grew most rapidly for children in both periods.

The results for education consumption for children and health consumption for the elderly are most striking. Public education consumption for people aged 0–19 increased by 16.5 and 18.5% per annum in the periods 1995–2002, and 2002–2007, respectively. Private education consumption for the same age group also increased rapidly, recording 11.4 and 12.6% per annum, respectively, during the two periods. The increase in education consumption for the 20–64 age group also appears to be due to substantial increase in education consumption for students in higher education.[5] Public health consumption for the over-65s increased remarkably, by 20.2% per annum in the period 1995–2002 and 13.5% per annum in 2002–2007. Private health consumption also increased substantially for this age group, increasing by 23.4 and 5.6% per annum during the two periods. As private health consumption also increased quite rapidly for children, it appears that private consumption increased most rapidly for children ages 0–19. For adults aged 20–64, consumption of housing increased more rapidly than for all the other age groups.

### *13.3.2 Reallocation System*

Reallocation systems — the funding method used to fill the gap between consumption and labour income — vary along two important dimensions: the governing or mediating institution and the economic form of reallocation (Lee 1994). The public sector reallocates resources by means of social mandates embodied in law and regulation and implemented by local, regional, and national governments. Education, public pensions, and health care programmes are important examples of public reallocation programmes. Private sector reallocations are governed by voluntary

[5] It is clear if we change the child age group from 0–19 to 0–24.

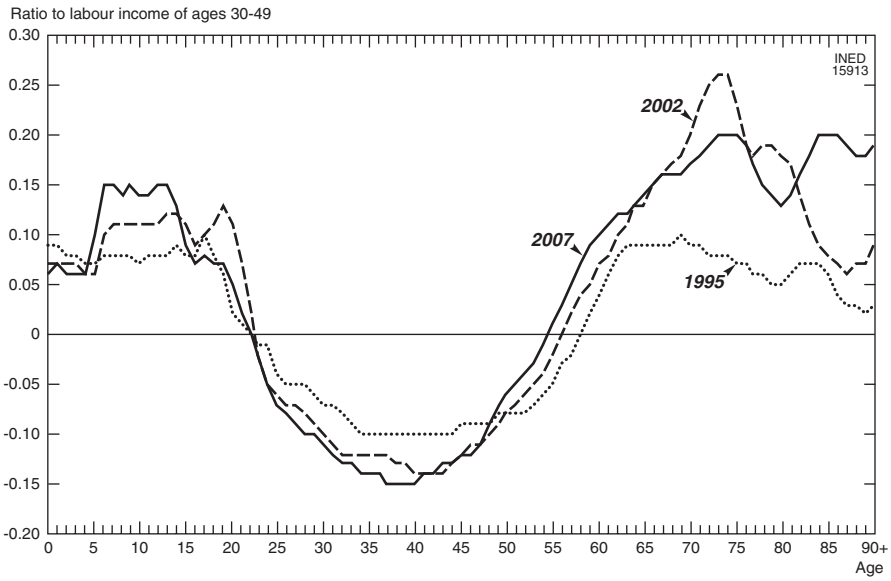



**Fig. 13.4** Per capita net public transfer profiles: 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/)

contracts, social conventions, etc. that are mediated by households, families, charitable organizations, and other private institutions. Important examples of private reallocations are private saving and credit transactions, and familial support to children and the elderly. The results of changes in the Chinese reallocation system are explained in turn in Figs. 13.4 and 13.5.

It is not surprising that transfers dominate the reallocation of wealth to children in any economy, because asset reallocation is not the usual mechanism for supporting consumption by young children. Although the country is no exception, familial transfer to children is particularly prominent in China, given the high level of private education consumption by high-school students (Fig. 13.4). Public transfers to children are rising due to the rapid increase in public education consumption. Public transfers to elderly, especially for the very old aged 80 and older, are rising due to public health consumption (Fig. 13.5).

Familial transfers for the elderly trend upward with age too, but net transfers decreased dramatically between 2002 and 2007 (Fig. 13.5), largely due to the difference in growth rate between inflows and outflows. That is, the outflows for the elderly grew much faster than inflows, which might be also related with the change in asset-based reallocation for the elderly, as described below.

Private asset-based reallocations were negative at ages 15–60, suggesting that people in this age range were saving a lot (Fig. 13.6). For those in their 60s and 70s, asset income was equal to or higher than saving. Private asset income rose steeply among people in their 40s and 50s, but their private savings were always quite low

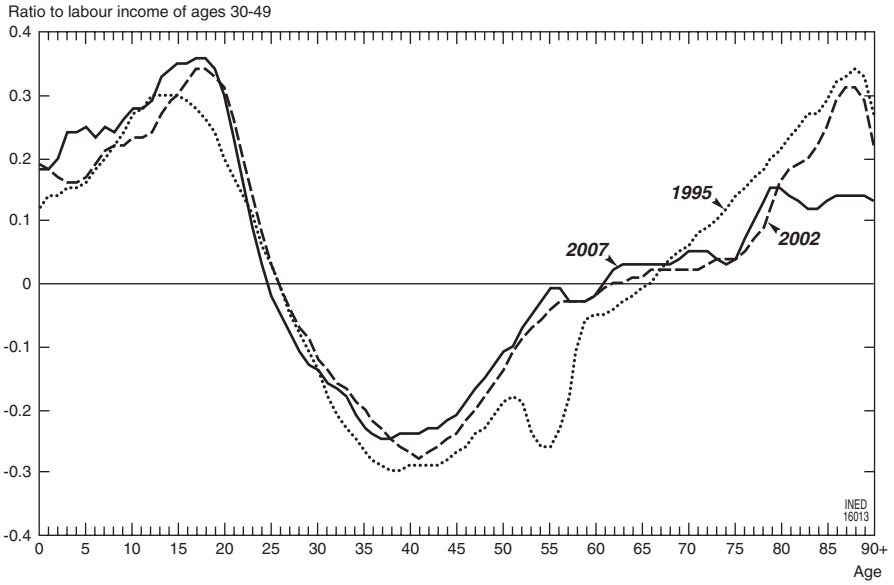



**Fig. 13.5** Per Capita net private transfer profiles: 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/)

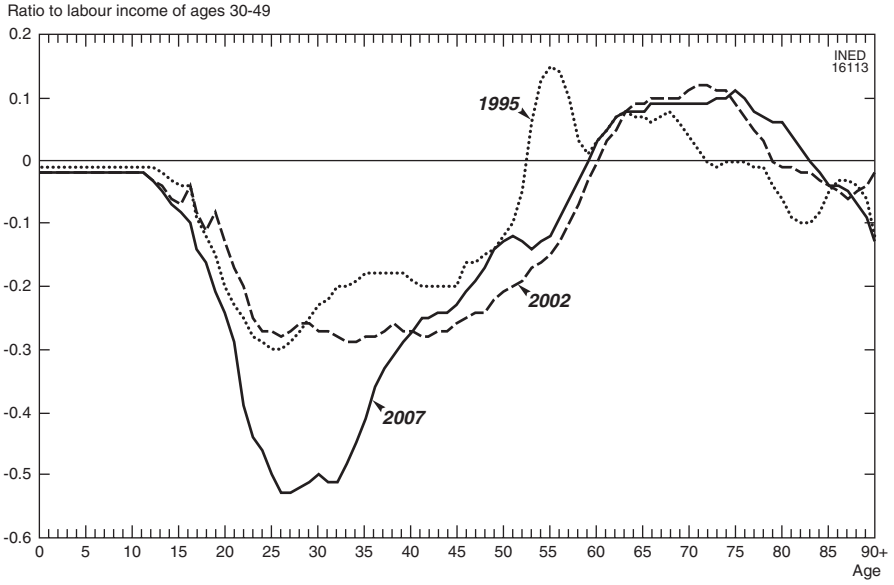



**Fig. 13.6** Per capita asset-based reallocation profiles: 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/)

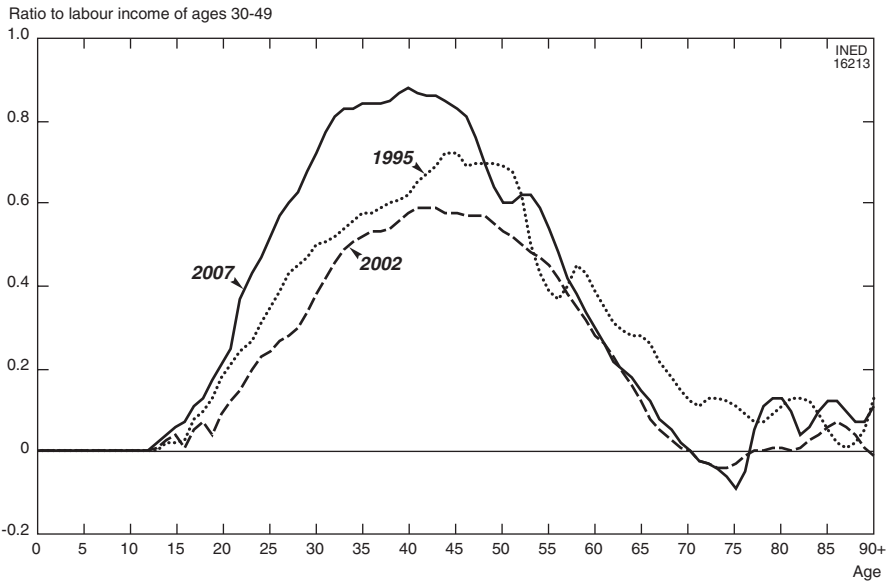



**Fig. 13.7** Per capita private saving profiles: 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/)

compared with their asset income, perhaps because people in this age group were financing much of the consumption of children and the elderly.[6]

A striking result is the huge negative number in asset-based reallocation (asset income minus saving) for young people aged 25–40 in the period 1995–2002, and again in 2002–2007. Quite surprisingly, asset income and saving increased in both periods, but saving increased much more than asset income for this age group (Fig. 13.7). On the other hand, the asset-based reallocation for older people aged 60–75 is either slightly positive or close to zero for all years. The positive asset-based reallocation increased between 1995 and 2002, due almost entirely to the decrease in private saving for the same period, and not to an increase in asset income. Per capita private asset-based reallocation profiles show a very similar picture.

What are the major sources of the large increase in saving by younger adults? Why did saving as well as asset income decline so rapidly after age 50? It is premature to speculate at this moment, and it is well beyond the scope of this chapter. However, it is worthwhile to mention that it must be related to the very high wages of young people compared with their elders. Since the presented estimates are cross-sectional, they reflect large differences in the experiences of the various age groups. Wages of young people in China increased very rapidly between 1995 and 2007, while the earnings of older people increased little, even in nominal terms (see Fig. 13.2). Older people may not even have been able to accumulate much wealth

[6] Or it could be simply because our results are based on cross-sectional rather than longitudinal data. See Mason et al. (2009) regarding this issue.

because wages were much lower when they were young. The lowering of interest rates between 1995 and 2007 may also have prompted the huge decline in saving behaviour by the elderly during the period, which in turn might have affected asset-based reallocation.

### *13.3.3 Sources of Financing Consumption*

Table 13.2 presents the national transfer flow account for China in a highly summarized form, reporting aggregate life-cycle deficits and aggregate reallocations by age in 100 millions of yuan. Total age reallocations and their major components are shown in the bottom panel, with positive values representing net inflows and negative values representing net outflows. The life-cycle deficit for people aged 65 and older, for example, was 97 billion yuan in 1995. It was substantially higher, at 320 billion yuan, in 2002 and further increased to 589 billion yuan in 2007. Clearly, the life-cycle deficit has grown as the population ages, and labour income is stagnant for this age group.

Table 13.2 enables us to measure the source of financing consumption for each age group. Figure 13.8 shows how consumption by children and the elderly was funded for the three periods. In the case of children, earnings were a small source for all years, and most of their consumption was financed by transfers in all three periods. Private transfers dominated, accounting for around 70 % for all three periods. The remainder consisted of public transfers.

For the elderly, work contributed about 52 % of consumption in 1995, but it declined substantially to about 25 % in 2002, and to 19 % or so in 2007. Public transfers accounted for only 20 % of consumption by the elderly in 1995, but jumped to about 43 % after 2002. Private transfers were a very important source of consumption for the elderly in 1995, accounting for about 23 %, but the proportion decreased to about 14 % after 2002. The importance of asset-based reallocation rose consistently, from only 5 % in 1995 to 18.4 % in 2002, and further increased to about 23.1 % in 2007.

## Conclusion

The challenges resulting from rapid population ageing and extremely low fertility are of great concern to China. This chapter provides insight into some important features of intergenerational resource allocation in the nation between 1995 and 2007, using the three periods (1995, 2002, and 2007) of data sets.

It appears from the present study that young adults are producing more than others through their labour. The mean age of labour income fell rapidly from 44.4 years in 1995 to 42.8 in 2002, and further decreased to 40.3 in 2007. On the contrary, total consumption for children and the elderly increased much more than the average. In addition, public consumption increased much more rapidly than private consump-

**Table 13.2** National transfer accounts, aggregate values by broad age groups: 1995, 2002, and 2007 (100 million yuan)

| 1995 | Total | 0–19 | 20–64 | 65+ |
|---|---|---|---|---|
| Life cycle deficit | −7958.57 | 7033.82 | −15963.45 | 971.06 |
| Total consumption | 30555.42 | 8301.12 | 20238.82 | 2015.48 |
| Public consumption | 7225.07 | 2911.63 | 3857.27 | 456.17 |
| Private consumption | 23330.34 | 5389.49 | 16381.55 | 1559.30 |
| Labour income (less) | 38513.99 | 1267.30 | 36202.27 | 1044.42 |
| Age reallocations | −7958.57 | 7033.82 | −15963.45 | 971.06 |
| Transfers | | | | |
| Net public transfers | 26.72 | 2012.87 | −2388.00 | 401.85 |
| Public transfer inflows | 8695.50 | 3010.80 | 4815.97 | 868.73 |
| Public transfer outflows | −8695.50 | −1007.19 | −7218.76 | −469.55 |
| Private transfers, net | 102.47 | 5686.57 | −6050.56 | 466.47 |
| Asset-based reallocations | −8087.76 | −665.62 | −7524.89 | 102.74 |
| Public asset-based reallocation | −1981.97 | −267.01 | −1601.02 | −113.94 |
| Public asset income | 1053.76 | 141.96 | 851.22 | 60.58 |
| Less: public saving | 3035.73 | 408.97 | 2452.25 | 174.51 |
| Private asset-based reallocation | −6105.80 | −398.61 | −5923.87 | 216.68 |
| Private asset income | 16726.54 | 8.38 | 15738.42 | 979.74 |
| Less: private saving | 22832.34 | 406.99 | 21662.28 | 763.07 |
| 2002 | Total | 0–19 | 20–64 | 65+ |
| Life-cycle deficit | −16780.53 | 11174.27 | −31150.91 | 3196.11 |
| Total consumption | 48446.36 | 12564.90 | 31604.93 | 4276.53 |
| Public consumption | 13949.58 | 5184.53 | 7437.05 | 1328.00 |
| Private consumption | 34496.78 | 7380.37 | 24167.88 | 2948.53 |
| Labour income (less) | 65226.89 | 1390.63 | 62755.84 | 1080.42 |
| Age reallocations | −16780.53 | 11174.27 | −31150.91 | 3196.11 |
| Transfers | | | | |
| Net public transfers | 0.00 | 3647.63 | −5480.21 | 1832.58 |
| Public transfer inflows | 17934.86 | 5348.28 | 9789.35 | 2797.23 |
| Public transfer outflows | −17934.86 | −1700.64 | −15269.56 | −964.65 |
| Private transfers, net | 1044.05 | 8943.63 | −8475.11 | 575.53 |
| Asset-based reallocation | −17827.38 | −1417.83 | −17197.12 | 787.56 |
| Public asset-based reallocation | −7056.27 | −907.35 | −5706.06 | −442.86 |
| Public asset income | 347.54 | 44.69 | 281.04 | 21.81 |
| Less: public saving | 7403.81 | 952.04 | 5987.10 | 464.67 |
| Private asset-based reallocation | −10771.11 | −510.48 | −11491.06 | 1230.42 |
| Private asset income | 22927.95 | 6.58 | 21518.96 | 1402.41 |
| Less: private saving | 33699.07 | 517.06 | 33010.01 | 171.99 |
| 2007 | Total | 0–19 | 20–64 | 65+ |
| Life-cycle deficit | −35171.07 | 17801.20 | −58865.41 | 5893.14 |
| Total consumption | 76126.70 | 20713.58 | 48093.66 | 7319.46 |
| Public consumption | 28660.66 | 9997.48 | 15593.60 | 3069.59 |
| Private consumption | 47466.04 | 10716.11 | 32500.06 | 4249.87 |
| Labour income (less) | 111297.77 | 2912.39 | 106959.07 | 1426.31 |

**Table 13.2** (continued)

| 1995 | Total | 0–19 | 20–64 | 65+ |
|---|---|---|---|---|
| Age reallocations | −35171.07 | 17801.20 | −58865.41 | 5893.14 |
| Transfers | | | | |
| Net public transfers | 0.00 | 5666.68 | −8951.01 | 3284.33 |
| Public transfer inflows | 36950.53 | 10741.37 | 20641.51 | 5567.64 |
| Public transfer outflows | −36950.53 | −5074.69 | −29592.52 | −2283.32 |
| Private transfers, net | 2378.10 | 15483.59 | −14299.37 | 1193.87 |
| Asset-based reallocation | −37420.54 | −3311.69 | −35543.18 | 1434.32 |
| Public asset-based reallocation | −13365.47 | −1575.95 | −10890.83 | -898.69 |
| Public asset income | 4606.97 | 543.22 | 3753.98 | 309.77 |
| Less: public saving | 17972.44 | 2119.16 | 14644.81 | 1208.47 |
| Private asset-based reallocation | 24055.07 | −1735.74 | −24652.35 | 2333.02 |
| Private asset income | 64463.50 | 300.90 | 61050.29 | 3112.31 |
| Less: private saving | 88518.57 | 2036.64 | 85702.64 | 779.29 |

Source: The 1995 and 2007 profiles are author's estimations. The 2002 profiles are available at http://www.ntaccounts.org/

tion for all age groups. Thus, the small increase in consumption compared with labour income appears to be entirely due to private consumption, which increased much more slowly than labour income or public consumption.

Public transfers became much larger between 1995 and 2002 for both children and elderly, and remained practically unchanged between 2002 and 2007. It is noteworthy to mention two events in China that occurred between the three periods, namely the Asian financial crisis during 1997–1998 and the SARS outbreak in 2003. Most researchers claim that China was much less affected by the economic crisis of 1997–1998 than Southeast Asia and South Korea. This might be because China's foreign investment took the form of physical capital rather than financial intermediaries, which insulated the country against the shock from the external financial market. Nevertheless, China's GDP growth slowed sharply between 1997 and 1999, calling attention to the potential impact of the crisis on its economy. In general, during an economic downturn, a lot of workers are forced to leave employment, and many of them are not able to re-enter the labour market even when the economic crisis is over. At the same time, there is usually a large increase in social expenditure, mainly due to changes in the economic and social environments, as well as some political factors. A decline in the family support system appears to be a new threat to the Chinese economy that is accelerating the ageing process. Rapid population ageing imposes a burden of old age support. As the traditional familial support system is breaking down, the number of families living with their aged parents is also in decline. We see that this notion is consistent with what we observed in China between 1995 and 2002: a much larger reduction in private transfers between 1995 and 2002, offset by an increase in public transfers during the period. The 2003 SARS outbreak was a public health event and GDP growth rate was not severely affected.

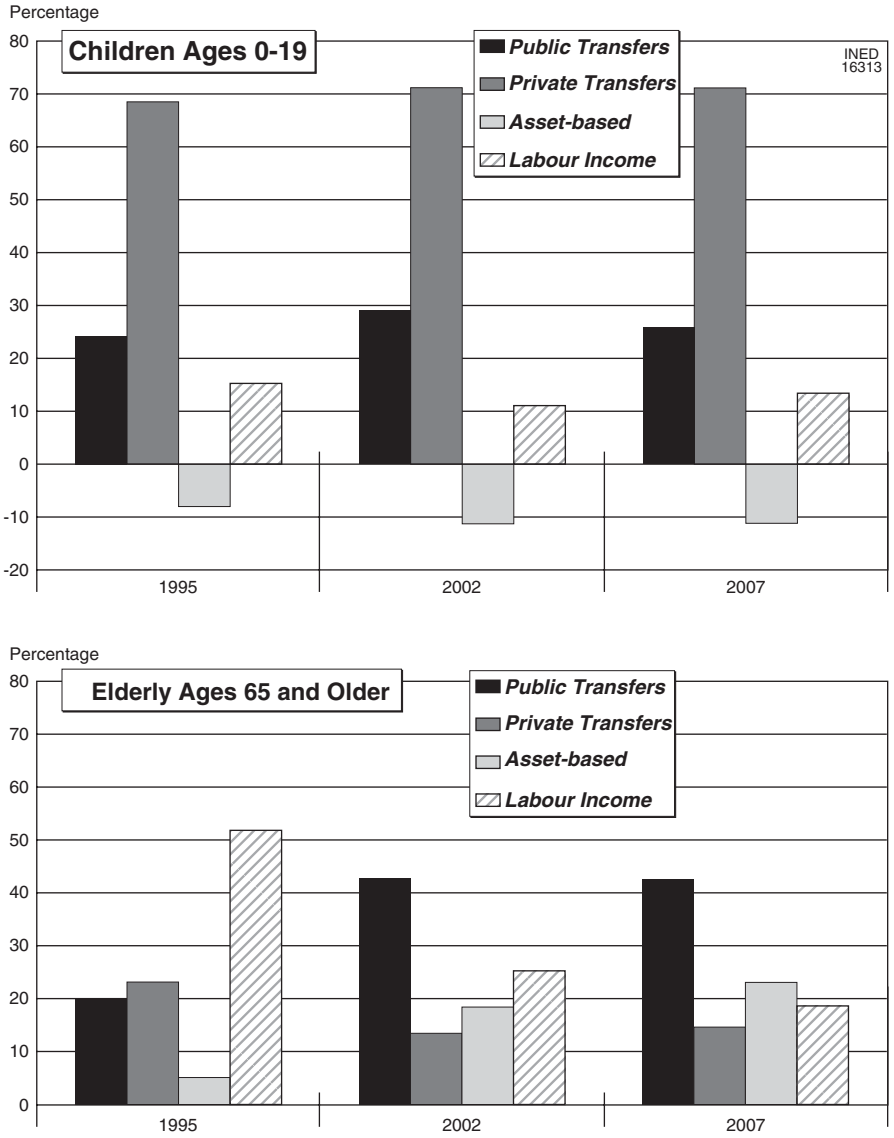



**Fig. 13.8** Sources of financing consumption: 1995, 2002, and 2007 (Source: The 1995 and 2007 profiles are authors' estimations. The 2002 profiles are available at http://www.ntaccounts.org/)

Perhaps the most important and striking result is the change in asset-based reallocation. It declined substantially for adult aged 25–40 mainly because saving increased much faster than asset income for this age group. On the other hand, the asset-based reallocation for people aged 65 and older is almost entirely due to the decrease in private saving, and not to an increase in asset income. This means

that the elderly in China have some degree of autonomy (i.e. ability to dissave) despite population ageing, the deterioration of the familial support system and loss of labour income. When the younger Chinese grow old in the future, they will be much wealthier because they will have had resources to accumulate wealth. This is good news for China, because it means that fewer public resources will be required by the old, which in turn will mitigate the financial burden caused by rapid population ageing.

However, China is facing two challenges in addition to those generally associated with population ageing. One is the increasing demand for public transfers. In 2009, China committed itself to building a universal public pension system in rural areas, funded by individual contributions and government subsidies. China had already made public health insurance available to urban employees in 1998, to rural citizens in 2003, and to urban citizens in 2007 (Li et al. 2011). A rapid increase in public pension funds will not be sustainable. Thus, increased reliance on asset accumulation will be critical in the future. The other challenge is related to the so-called "middle-income trap". Eichengreen et al. (2011) argue that economic growth in China will slow down sharply in the near future in large part because China has reached middle-income status. Can China break the middle-income trap sooner than other countries? Exactly how these challenges will play out in China remains to be seen.

## References

CHIP. (1995). Chinese household income project, 1995 (ICPSR 3012). http://www.icpsr.umich.edu/icpsrweb/icpsr/studies/3012 and http://www.ciidbnu.org/news/201212/20121219131831706.html. Accessed 22 Nov 2013.

CHIP. (2002). Chinese household income project, 2002 (ICPSR 21741). http://www.icpsr.umich.edu/icpsrweb/icpsr/studies/21741 and http://www.ciidbnu.org/news/201212/20121219131831706.html. Accessed 22 Nov 2013.

CHIP. (2007). Chinese Household Income Project, 2007. http://www.ciidbnu.org/news/201212/20121219131831706.html. Accessed 22 Nov 2013.

Eichengreen, B., Park, D., & Shin K. (2011). When fast growing economies slow down: International evidence and implications for China (NBER Working Chapter No 16919). Cambridge: National Bureau of Economic Research.

Lee, R. (1994). The formal demography of population aging, transfers, and the economic life cycle. In L. G. Martin & S. H. Preston (Eds.), *Demography of aging* (pp. 8–49). Washington D.C.: National Academy Press.

Lee, R., Lee, S.-H., & Mason, A. (2008). Charting the economic life cycle. In A. Prskawetz, D. Bloom, & W. Lutz (Eds). Population aging, human capital accumulation, and productivity growth. NBER Working Chapter No 12379. Cambridge: National Bureau of Economic Research.

Li, L., Chen, Q., & Jiang, Y. (2011). The changing pattern of China's public services. In R. Lee & A. Mason (Eds.), *Population aging and the generational economy* (pp. 408–420). UK: Edward Elgar.

Mason, A., Lee, R., Tung, A.-C., Lai, M.-S., & Miller, T. (2009). Population aging and intergenerational transfers: Introducing age into national accounts. In D. Wise (Ed.), *Developments in the economics of aging series*, Chicago: National Bureau of Economic Research and University of Chicago Press.

MOE. (1996). Ministry of Education of China. http://www.edu.cn/. Accessed 22 Nov 2013.
MOE. (2003). Ministry of Education of China. http://www.edu.cn/. Accessed 22 Nov 2013.
MOE. (2008). Ministry of Education of China. http://www.edu.cn/. Accessed 22 Nov 2013.
NBS. (1996). National Bureau of Statistics of China. http://www.stats.gov.cn/. Accessed 22 Nov 2013.
NBS. (2003). National Bureau of Statistics of China. http://www.stats.gov.cn/. Accessed 22 Nov 2013.
NBS. (2008). National Bureau of Statistics of China. http://www.stats.gov.cn/. Accessed 22 Nov 2013.
NHSS. (1996). National Health Services Surveys. http://www.nhfpc.gov.cn/mohwsbwstjxxzx/s8211/list.shtml. Accessed 22 Nov 2013.
NHSS. (2003). National Health Services Surveys. http://www.nhfpc.gov.cn/mohwsbwstjxxzx/s8211/list.shtml. Accessed 22 Nov 2013.
NHSS. (2008). National Health Services Surveys. http://www.nhfpc.gov.cn/mohwsbwstjxxzx/s8211/list.shtml. Accessed 22 Nov 2013.
UN-WPP. (2012). United Nations. World population prospects. The 2012 Revision. http://esa.un.org/wpp/. Accessed 22 Nov 2013.